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WESTERN AUSTRALIA

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REPORT
of the
COMMISSIONER
of
PUBLIC HEALTH
for the year
1950

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Report of the Commissioner of Public Health.

The Hon. Minister of Public Health.

I have the honour to submit the Report of the Department of Public Health for the Year 1950.

ADMINISTRATION.

On the 5th May, 1950, Dr. W. S. Davidson was appointed as Deputy Commissioner of Public Health.

The Health Act provides for the appointment of a Deputy in addition to the Commissioner. The heavy duties which are imposed on the Commissioner under the Health Act, together with an expanding responsibility with the formation of the State Health Council, and the continuing hospital responsibility as Principal Medical Officer under the Hospitals Act, had made it clear that all these duties and responsibilities could not be adequately undertaken solely by one man. It is necessary for him to delegate responsibility and this may now be done with the filling of the position of Deputy.

STATE HEALTH COUNCIL.

During the year the State Health Council continued its important work of investigating and advising the Government on matters of importance which are either referred to it by the Government or which it initiates of its own accord. The members of the Council at the end of the year were :—Dr. L. Henzell (Chairman), Dr. W. S. Davidson (Deputy Commissioner of Public Health), Mr. H. T. Stitfold (Under Secretary), Dr. Gerald C. Moss, Dr. John A. Love, Dr. A. Roy Edmonds, Dr. Martin F. Williams, Dr. Allan B. Webster, Dr. Harry Leigh Cook, and Dr. B. W. Buttsworth.

During the year there were five meetings held, and in addition, meetings of the Infant and Maternal Health Committee and the Hospital Requirements Committee took place.

Resolutions were passed by the Council and were submitted to you on the following matters :—

Amongst the questions to be considered by the Council is that of providing an improved medical service for natives through the agency of private practitioners. Negotiations were initiated with the Department of Native Affairs and these have resulted in a system whereby natives may obtain treatment from private practitioners—the Department of Native Affairs being responsible for the payment of an agreed scale of fees equivalent to those applying to Workers' Compensation cases.

A further aspect of the native question to be considered was the provision of suitable and adequate housing. The Council's opinion was that no progress was likely in the education of the native population to a European appreciation of hygiene and sanitation whilst they remained in their present environment. It, therefore, recommended the inauguration of a housing scheme for half-caste natives along the lines of the Commonwealth-State Scheme. The Government agreed to the allocation of a certain number of houses for the use of natives.

The Council has two standing Committees. These are the Hospital Requirements Committee and the Infant and Maternal Health Committee. The action taken by the Hospital Requirements Committee is referred to in a later section of this report. It is note-worthy that a recommendation of the Committee that the Government should strive to prevent the closing of private hospitals resulted in the Government taking over a number of hospitals which were about to close. This prevented a worsening of the bed position.

The Infant and Maternal Health Committee has been responsible for a number of worthwhile innovations. A standard ante-natal and obstetrical history card has been prepared. This is issued free of charge to private practitioners. Increased use is being made of this card.

The Department of Public Health is securing a number of Humidicribs for use in the case of premature birth which will be allotted to districts wherein a certain number of births occur annually and at strategic points in the more sparsely populated areas of the State.

The establishment of a consultant obstetrical service and the inauguration of a refresher course for general practitioners in the management of difficult labour and for the care of the new-born are matters receiving consideration. A suggestion that an ante-natal clinic be established for those women not booked to be admitted to King Edward Memorial Hospital was investigated. This, however, was considered unnecessary on receipt of advice from the honorary staff of that institution that they were willing to attend, free of charge, any indigent patient referred to them at that hospital by a private practitioner.

The provision of specialist advice as to the treatment of the physically handicapped children attending the Goldfields Special Education Centre was a matter which was taken up with the Education and Hospital authorities. It was revealed that no children in need of specialist attention were denied treatment at the Princess Margaret Hospital. Any case needing admission was admitted. An aspect of this matter was the accommodation of children who of necessity came to Perth from rural areas for specialist treatment. It appeared that the accommodation available was adequate for the present demand and the arrangements for admittance to wards at Princess Margaret Hospital were a considerable aid in this direction.

Much of the success which attended efforts to establish a course of training in physiotherapy in the State originated from the support given to the proposal by the Health Council. The Council viewed this development as but one facet of the over-all picture in the proposal to establish a medical school in Western Australia.

Much has been done to improve radiological services in country areas. On the recommendation of the Council a full-time x-ray engineer has been appointed to the Medical Department. A State-wide survey of available equipment has been made and many improvements effected. The services of the Engineer are available to country practitioners to advise as to the standard practice in radiology during his frequent country tours.

Over the years there has been doubt due to the lack of a satisfactory definition of what was meant by the term "Anaesthetic Death." The Council initiated enquiries into the matter and co-opted the services of interested bodies. As a result a definition has been arrived at whereby practitioners will be able to decide in any particular case whether it should be classified as "death under anaesthesia" or otherwise. The information has been made known to all members of the profession.

The latest information as to the technique of administering anaesthetics is to bo circulated to medical practitioners from time to time as it comes to hand from the Society of Anaesthetists.

The problem of providing suitable accommodation for the aged was a matter which engaged the attention of the Council. The Government has accepted in principle the Council's recommendation that in future planning every endeavour should be made to eliminate the necessity of removing aged persons from their home environment by providing de-centralised institutions.

An investigation was made into the apparent high mortality rate in this State attributed to Coronary Disease. The data collected throughout the investigation was submitted to the Royal Australian College of Physicians for opinion.

A special meeting of the Council held in August, 1950, conducted a detailed review of the report of the Inspector-General of Mental Hospitals following the latter's tour of Britain and Europe. The Council supported the adoption of Dr. Thompson's recommendations. It considered that the establishment of an institution for the care of the mentally sub-normal cases was a matter of great urgency.

It was on a recommendation of the Council that the Government acted to secure the services of Professor Ida Mann and Professor Gye to carry out work in the field of cancer research in this State.

Recent months have brought the introduction of a number of new and highly toxic insecticides. The Council's recommendations in regard to these substances include the introduction of legislation—

(a) to set up an advisory committee on pesticides ;

(b) to vest control of manufacture, sale and the methods of use of these substances in the committee ;

(c) to require the compulsory registration with the committee of all dangerous pesticides.

Legislation to give effect to these recommendations is under consideration by the Government.

Perhaps the most important subject to be dealt with by the Council was the reception of a report by Dr. Davidson, the Deputy Commissioner of Public Health, concerning a Departmental investigation into the hospital requirements of the State. Dr. Davidson's report is published in Appendix IX.

On my assuming office as Commissioner of Public Health in February, 1950, it soon became apparent that although the hospitals of the State had been in existence for a considerable number of years, and although in 1945 the then Government had agreed to the formation of what it termed Regional Hospitals to be developed at Albany, Bunbury, Geraldton, Collie, Northam, Katanning, Merredin and Kalgoorlie, no comprehensive survey had, up till then, been carried out into hospital requirements of the community as a whole expressed in terms of number of hospital beds required, or the location and types of hospitals necessary to service the State. Complaints and requests are constantly being received from local communities in the State, particularly in country areas, for more hospital accommodation. It is well recognised in other countries that the hospital requirements of a community may be expressed arithmetically as a ratio of hospital beds needed for the population to be served, taking into account communication and transport, etc. Further, one important aspect had been hitherto neglected, namely, the question whether those beds which had already been provided were being used in an efficient fashion.

The public is becoming more hospital minded and there is an increasing tendency on their part to expect admission to a hospital for comparatively minor illness. No matter how many beds were provided this public demand would create a tendency to keep them full, provided the nursing staff were available.

There are no inherent medical or epidemiological reasons why the population in this State should require more hospital beds per 1,000 population than other countries.

Dr. Davidson's investigations covered the field not only of efficient usage of the beds which we already have, but an estimate of the hospital needs of all parts of the State which were zoned for hospital purposes.

An examination of this report reveals certain highly significant facts which he has emphasised. Attention must here be drawn to the fact that, speaking generally, the greatest need for an increased number of beds is in the metropolitan area. Country areas are, with certain isolated exceptions, already supplied with ample beds. In fact in most hospitals there is a surplus. The deficiency in the metropolitan area is dangerously high and, in the opinion of the State Health Council, no hospital construction in a country area should prejudice the filling of this metropolitan gap by the provision of more accommodation.

The issue of this report marks a milestone in the development of a hospital policy in the State and the State Health Council urges that every heed be paid to its findings.

LOCAL AUTHORITIES.

The administration of the Health Act by the various local authorities throughout the State continues unchanged. There is a serious shortage of trained health inspectors who are prepared to take up health inspectorial work, particularly in the country. Many local authorities are therefore greatly handicapped in their administration of the Act. There are some Road Boards who would be willing to appoint health inspectors were any available. Every effort is being made to increase the pool of inspectors so that all parts of the State may have the benefit of an appointment.

SANITATION.

It is pleasing to record an increasing sense of responsibility on the part of local authorities and other Government Departments concerning sanitation. In the past many of the worst offenders against the sanitary provisions of the Health Act have been various local authorities in relationship to their own property and also other Government Departments.

A greater appreciation of the provisions of the Act on the part of these authorities and Government Departments is taking place. Good relations are being established between them and the Department and it is hoped that they will continue.

An increasing number of local authorities has adopted model by-laws to ensure compulsory installation of septic tanks for the bacteriolytic disposal of sewage. In many country areas this expanding programme is handicapped by a lack of an adequate water supply. However, almost all local authorities are alive to the many advantages of this system and are anxious to adopt it.

NURSING.

The training of nurses in the Government Hospitals has continued throughout the year under the direction of Miss Bailey, the Organiser of Nursing Training.

In spite of many difficulties Miss Bailey has continued to raise the level of the training of nurses in our country hospitals and is to be congratulated on her results.

The presence of the training school at Devonleigh in Cottesloe in the closest proximity to the midwifery hospital is most undesirable. Every effort should be made either to find another site for a Midwifery Hospital or another site for a Central Training School. Each, at the present is gravely handicapped by lack of space and the many attending disabilities.

The following is a brief report from Miss Bailey, Organiser of Nursing Training :—

The year 1950–51 was an extremely difficult year with regard to teaching staff at the Central Training School and the Organiser's supervison of practical work in the hospitals has been very limited in consequence. However, standards have been maintained at the Central Training School and improvements made.

Recruitment has been quite good and losses from the Hospitals no more than usual. The standard of nursing has improved in all hospitals and more equipment has come forward.

The First Students of the Central Training School have passed their Final Examinations and it is felt that now that some of our own Trainees will be available a far more stable teaching staff in the Hospitals should be built up if the right degree of priorty is given to our own students and they are encouraged to equip themselves by experience to make themselves available for post graduate studies.

Building and alterations have gone ahead at Collie, Busselton, Geraldton and Northam and are commencing at Narrogin and at the Central School.

Clincial Sisters have been secured for Northam, Collie, Busselton and Geraldton and should assist greatly with the students' instruction.

Many Schools were visited and circulars were issued to others during October-November, 1950, and a good number of inquiries were received from would-be students. It is felt far more should be done in this field.

The Pre-Nursing Course with students sitting for the First Part of the First Professional is proving of value and should be greatly expanded.

Gardens and lawns have been improved at the Central School and the " Story of Medicine and Nursing " was painted for the School by Miss I. Forbes-Smith.

NURSES' REGISTRATION BOARD.

Eleven meetings were held during the year.

On 15th June the Alexandra Home was approved as a training school for mothercraft nurses, the Nurses Registration Act having been amended in 1948 to provide for the training and registration of mothercraft nurses.

The number of nurses registered in the various divisions of the register whose registration was in force at the end of the year was :—

	1950.	1949.
General	1,858	(1,731)
Midwifery	964	(1,004)
Infant Health	179	(190)
Children's	20	(22)
Mental	51	(52)
Tuberculosis	29	(24)

Figures in parentheses are those of 1949 for comparison.

Applications for restoration of name to the Midwifery division of the register were approved in nine cases.

One prosecution was made under section 13 (1) of the Nurses Registration Act.

Sixteen examinations were conducted during the year, as follows :—

General	3
Midwifery	3
Mental	1
Tuberculosis	3
First Year Professional	3
Educational	3

PRIVATE HOSPITALS.

During the year 1950, the following hospitals ceased operating because they could not be brought up to the required standard, or because of the difficulty in securing staff.

Park View Maternity, West Perth.
National Maternity, Collie.
Lynwood Convalescent Home, Perth.
Monkton House Convalescent Home, Mt. Lawley.

Stirling Hospital, Bunbury, cancelled its midwifery license and doubled the number of general patients.

Bundi Kudja Maternity Hospital, Fremantle, was brought under Government control.

St. Annes Nursing Home (Sisters of Mercy) opened a " C " class hospital in Mt. Lawley.

Owing to rapidly increasing costs for maintenance and administration in any hospital which is conducted as a first-class modern hospital, great difficulty is being experienced in the private hospital's capacity to pay its way. The fees chargeable to patients have risen to such a degree that an increasingly small number of the community is able to afford them. Further difficulties with the keeping open of those private hospitals still available may therefore be expected.

There is a great demand for beds for the aged and chronic patients who are unable to afford the excessive fees charged by persons conducting unregistered homes.

FOOD AND INSPECTORIAL STAFF.

This year further additions had to be made to the staff to cope with increasing duties and to meet all our commitments with local authorities. By the end of 1951 it is hoped that more trained men from the Commonwealth Reconstruction Training Class will be available for appointment.

HEALTH INSPECTORS' CONFERENCE.

The Annual Conference of Health Inspectors of Local Health Authorities was held in Perth on the 12th and 13th July, 1950. The meeting was opened by Dame Florence Cardell-Oliver, Minister for Health. Local Health Authorities were well represented and the Inspectors took a keen interest in the proceedings.

The following lectures were delivered :—

An Address by Dr. Linley Henzell, Commissioner of Public Health, on the " Role of the Health Inspector."

Lecture on " Composting," by Mr. B. Carlisle, of the Engineers Department of the Perth City Council.

Lecture on " Law and Local Government," by Mr. J. Hale.

Lecture on Meat Inspection by Mr. A. G. Stephen, Chief Inspector of the Department of Public Health.

Lecture on " The Milk Board in relation to Public Health" by Mr. S. K. Goldsmith, of the West Australian Milk Board.

Lecture on " Insect Pests," by Dr. W. S. Davidson, Deputy Commissioner of Public Health.

During their stay in Perth the Inspectors were taken on a visit to sewerage works at Subiaco and also witnessed a demonstration of mass spraying by the Fogging Machine purchased by the Department of Public Health.

FOOD STANDARDS ADVISORY COMMITTEE.

During 1950 there were four meetings of the Food and Drug Standards Advisory Committee.

On the advice of the Committee a number of amendments were made to the Food and Drug Regulations. These include the prohibition of the use of secondhand corks or crown seals on food containers, prescribing a standard for imitation cream, the deletion of Edicol Orange as a permitted food colouring matter and restriction of the use of the word " Champagne " to the product naturally carbonated and fermented in the bottle.

Details of work of Inspectorial staff are included in Appendix XXIV.

Samples Submitted, 1950 :—

	Number of Samples.	Number failing to comply with regulations.
Cordials and Fruit Juices	65	....
Cooking Oil	1	....
Crayfish	1	....
Bread	1	1
Cocoa Butter	1	....
Gelatine	1	....
Milk	37	3
Bacteriological—		
Sausages	2	....
Butter	2	....
Water	2	....
Milk	5	5

Septic Tanks.

During the year plans inspected and approved totalled 4,189. Revenue from this source amounted to £4,406 2s. of which the local authority received 50 per cent.

Imported Frozen Fish.

Total weight, 1,445,894 lb. Revenue, £359 4s. 7d.
Condemned as unfit for human consumption, 32,256 lb.

Prosecutions, 1950.

Health Act.—Costs, £13 15s. Fines, £20.
Nurses Registration Act.—Costs, £2 6s. Fines £1.

MEDICAL LABORATORIES.

The report of the Director, Dr. W. A. Young, shows a progressive development in the scope and volume of the work of the Laboratories. This has been done despite the grave staff difficulties which continued because of the failure to appoint men to two key positions—Bacteriologist and Biochemist.

It is surprising that although medicine has shown a generally progressive outlook in Australia within the past ten or twenty years, the realisation of the importance and significance of a highly organised pathological service has been slow in developing. The fact that the pathologist should possess the professional status of a consultant is not even now recognised universally and this no doubt is the main reason for the difficulty experienced in the filling of these important positions.

Nevertheless the work of the laboratory has under the direction of Dr. Young shown a material advance. The number of routine examinations increased by 57.3 per cent. compared with those for 1949, the grand total reaching the figure of 100,419.

Dr. Young mentions the growth of the laboratory at the King Edward Memorial Hospital. Greatly handicapped as it is by lack of space, it has already shown that its work will be of material aid in reducing maternal and infant morbidity and death.

Dr. Pearson's work on the post-mortem examinations of stillbirths continues.

Dr. Young comments on the evidence furnished by the bacteriological section that there is a significant over-all increase in the number of organisms isolated that are not sensitive to sulpha-drugs and antibiotics. These results are observed in other countries and show that much closer co-operation is necessary between the clinician and the bacteriologist.

Pathology in all its branches is an expanding science.

The amalgamation of the Public Health and the Royal Perth Hospital Laboratories at the opening of the new Royal Perth Hospital in 1948 was aimed at the co-ordination and integration of two parallel services. Already it has been clearly shown that the accommodation available is much too limited and that within another two years the congestion will produce confusion and bottle-necks that will gravely impair the laboratory's efficiency.

Being situated in the Royal Perth Hospital and more exposed to the urgent necessities of acutely ill patients, the laboratory must inevitably tend to divert most of its resources to the hospital's service. Public Health investigations necessary in preventive medicine, the sphere of action of which is outside the hospital, have a tendency to be relegated to the background or not even attempted. Dr. Young mentions this grave dilemma in his report (*see* Appendix I) and his recommendation of the urgent consideration of the building of new and separate public health laboratories is to be strongly supported.

NOTES ON INFECTIOUS DISEASES.

Towards the end of the year a new position of Epidemiologist was created in the Department. The study of infectious disease, its mode of transmission and social behaviour is now a science of its own and demands informed and expert attention. The day is past when a collection of figures illustrating the attack rates and significant mortality rates of infectious diseases in the community, may be considered to be a sufficient activity of a Public Health Department. The combination in a doctor of clinical training and experience with ability to investigate, study and analyse the behaviour of infectious diseases is essential in the equipment of an epidemiologist. The creation of this position has strengthened the action taken by this Department in this important sphere of its duties.

Diphtheria.

See Appendix XVII (A). During the year 172 cases were notified—a number exactly equal to 1949. There were seven deaths. The annual death rate from diphtheria has averaged 1.4 per 100,000 for five years. It is interesting and salutary to compare our figures with those of England and Wales. It will be noted that, with an increase in the immunisation rate in England and Wales commencing in the year 1939 the death rate has fallen from 5.2 per 100,000 to 0.2 per 100,000 in 1949. The results are not only dramatic but very satisfying. It is surprising that although it would have been thought that adequate publicity had been given to the need to immunise children against diphtheria, there are still far too many parents who neglect this simple and harmless precaution. We know how to abolish almost completely the death rate from diphtheria. It is the responsibility of the parent to see that this is done. The Department and local authorities have made the facilities available and co-operation with the Education Department, Infant Health Clinics and private doctors is as close as it could be. It now rests with the public to use these facilities.

Poliomyelitis.

The incidence of poliomyelitis remained practically unaltered in comparison with 1949. The epidemic of 1948 has not been repeated.

An indication of the amount of field work which is done in the investigation of poliomyelitis may be obtained by reading Dr. Snow's report in Appendix XVII (B) and also by a reference to an earlier report of his published in the Report of 1948. An immense amount of careful and painstaking investigation has been done. Nevertheless it is only by such investigations that the facts concerning poliomyelitis may be established. This was well shown by the establishment of a relationship between certain types of intramuscular injections and poliomyelitis by Dr. McCloskey in Victoria in 1950.

Infective Hepatitis.

Attention should be drawn to an epidemic of Infective Hepatitis which is reported by Dr. Edwards in Appendix XVIII. This epidemic was continuing at the end of the year and it is anticipated that it will continue into 1951. There seems to be little that can be done at the present to control it other than attention to sanitation.

Enteritis and Diarrhoea.

This continues to take a preventable toll of our child population. During the year there were 26 deaths reported in children under two years of age. Almost all of these are preventable. They can be controlled by rigid attention to the elements of sanitation and hygiene and a recognition that the house-fly is an enemy of mankind. In this country long and close acquaintance with the house-fly has rendered our people humourously tolerant of its existence. Nevertheless it is a dangerous enemy and every weapon in our power should be used to control this menace.

The public is careless concerning the control of the fly's breeding places and lax in denying it access to houses and to food. Further education is needed on this point.

Tuberculosis.

During the year there was a continued development in the programme of tuberculosis control. The Health Act was amended to allow of compulsory x-ray examination of the chest of all persons over the age of 14 years of any class specified. The energy of the Branch is being directed to case-finding in those classes of the community where there is an increased incidence of the disease or where there is the heaviest exposure to infection of others. This power of compulsory x-ray examination, combined with the powers of restraint over the recalcitrant infectious patient, gives the Department all the legal powers which are considered necessary for the control of the infection.

Dr. King's report (Appendix II.) indicates the value of -xray examination of the chests of all hospital patients and emphasises the value of co-operation with private doctors who refer suspicious cases for examination.

The high incidence of tuberculosis in migrants, especially Displaced Personnel from Europe, still remains a major problem. At the end of the year 20 per cent. of all beds at the Wooroloo Sanatorium were occupied by migrants.

Special mention should be made of the survey, using aerial transport of x-ray equipment and staff among the aborigines in the North-West and the Kimberleys which is mentioned in Dr. King's report. It is pleasing to note that the existence of the disease in the aborigines was no higher than it is in the white population.

It is a pleasure to record the high standard of surgical treatment maintained by the Consulting Thoracic Surgeon, Mr. F. Clarke and the Consulting Anaesthetist, Dr. G. F. Troup.

An interesting feature of the work of the Perth Chest Clinic, and a feature which has been observed in other countries where similar work is carried on, is the revealing of abnormalities in the chest other than tuberculosis (heart conditions, new growth, etc.). The encouragement of x-ray examination of persons who have chest symptoms plays an important role in the discovery of these other diseased conditions and often paves the way to early treatment which might otherwise be delayed.

The excellent work being undertaken by x-ray examination of all the patients at the Royal Perth Hospital by the Medical Superintendent, Dr. R. R. Anderson, deserves further mention. Dr. Anderson is to be congratulated on this outstanding work which his hospital was the first to introduce in Australia. It remains one of the principal methods of discovering tuberculosis in unsuspected cases. The closest co-operation exists between the hospital and the Tuberculosis Control Branch.

SCHOOL DENTAL SERVICE.

During the year it was possible to augment considerably the staff of School Dental Officers which increased from five to 11. More work has now been possible in outlying areas which have not been visited for years. In spite of this increase in staff it is impossible for the School Dental Services to cover completely all of the dental care of school children in the State which appears to be expected in some quarters.

The Senior Dental Officer, Mr. McKenna, attended the Dental Congress in Sydney in August. As a result of this visit he was able to meet colleagues from other States and other parts of the world and obtain information and experience which has proved of great value to the Department. This visit of his is another instance of the need for professional and technical officers in this State to travel outside the State in order to obtain further experience.

An examination of the report (Appendix XVI.) will show that of 7,852 children seen only 1,677 or 21 per cent. needed no attention. The bad state of the dental health of our children is a national reproach. The role of School Dental Officers should not merely consist of the routine examination and remedial treatment of the teeth of children. They should act as agents for the spread of dental health information and propaganda.

SCHOOL MEDICAL SERVICE.

During the year we were fortunate in securing additions to the School Medical staff which increased from three to eight with a concurrent increase in the nursing staff also from three to eight. This increase did not occur until the second half of the year but for 1951 an increased programme of School Medical Examination is to be planned.

Considerable importance is attached to nutrition. As a race we are too glib in our assumption that we live " in the best of all possible worlds." We assume that our standards of physique and nutrition are " second to none." It is not known if there is any specific evidence in support of this assumption which would bear critical examination.

The world has been made aware in the past 10 years of what may be done for the nutrition and health of school children by the diets which were adopted of necessity in Britain in the course of the late war. In this country we persist in our highly processed and artificial foods and a person who advocates a return to a more rational national diet is apt to be labelled a crank.

The policy of the School Medical Service in recommending and sponsoring the adoption of the so-called " Oslo Lunch " for school children is to be pursued with vigour. We have little room for complacency in our attitude to the diet of our children.

Dr. Stang's report is published in Appendix XIV.

INFANT HEALTH.

There has been a gratifying increase in the number of Infant Health Centres established and in the number of attending mothers with babies. Expansion during the year enabled the whole of the State to be covered. The Returns show that only 28 per cent. of the mothers attending the clinics feed their babies from the breast for the first five months. Twenty per cent. are partially breast fed. The fact that over 50 per cent. of our babies are artificially fed is alarming. Further education and encouragement of mothers is required.

There are now 45 full-time Centres and 236 Sub-Centres.

The policy of the Department is to endeavour to increase the interest of local authorities in Infant Health work. Health administration requires as much decentralisation as is compatible with efficiency. Infant Health work should have an obvious local appeal.

Lectures on mothercraft to girls at High Schools are most desirable. It is interesting to see from Dr. Stang's report (Appendix XII.) that this activity is to be continued and expanded.

INFANT MORTALITY.

Infant Mortality, 1950.

Western Australia	26·7 per 1,000 live births.
Great Britain	29·8 per 1,000 live births.
Sweden	20·0 per 1,000 live births.

Comparison of rates in Western Australia and other Australian States in 1949 :—

	W.A.	N.S.W.	Vic.	Qld.	S.A.	Tas.
Under 1 year per 1,000 live births	26·41	27·29	21·89	24·27	27·68	23·91

STILLBIRTH INQUIRY.

Investigation into the causes of stillbirth, neo-natal deaths and premature births are continuing with vigour. Reference should be made to Dr. Snow's report (Appendix VII.). This report is a preliminary one and further information is awaited.

MATERNAL HEALTH.

It is gratifying to record that in 1950 maternal mortality rate was further reduced and that for the year it was 0·91 per 1,000 live births.

Comparative Figures.

1911	4·8
1921	3·0
1931	2·9
1941	2·37
1948	1·47
1949	1·18
1950	0·91

This offers some cause for congratulation and is an indication that ante-natal care is more availed of and that the doctor and midwife are more experienced and skilled in obstetrics than formerly. Nevertheless there is no room for complacency as in 1949 in Victoria the figure was 0·875. The figure for 1949 for the U.S.A. is under 1·0 and in England and Wales the figure was 0·86 per 1,000 live births in 1950. We must intensify our standards of ante-natal care and improve conditions under which all women have babies. This is a matter of vital public interest and a grave responsibility of this Department.

ARGENTINE ANTS.

In 1948 the Health Act was amended specifically to bring the control of Argentine Ant infestation within the responsibility of this Department.

The history of the campaign to control this pest is outlined by Dr. Davidson in his report in Appendix X.

The success of the campaign will depend upon the availability of a sufficient supply of D.D.T. or an alternative insecticide and the energy and co-operation of the public and local authorities.

The thanks of the community are due to Dr. Davidson's team of workers in the Department, their colleagues in local authorities and those members of the public who have aided them in their task.

NORTH-WEST.

In the course of the year routine visits have been made by a Health Inspector of this Department to places in the North-West.

It is regrettable that there has been little material improvements in the conditions which were reported on by my predecessor in his Annual report for 1948. A state of apathy continues on the part of some of the local authorities.

While all the difficulties of building in this part of the State are realised, there is in general a deplorably low standard of housing for the white population. It should not be necessary to stress the point that if we wish to populate the North-West with white people we must provide decent and suitable living facilities. Without these our women will not tolerate the crude conditions at present existing, and without women no civilisation is possible. It is pathetic that with the large number of words and excellent intentions expended on this problem within recent years there has been so little show of results. A defeatist attitude must inevitably invite defeat.

HEALTH OF NATIVE POPULATION.

The native population of the State may be broadly divided into two main groups ; those north of Geraldton and those to the south. Each group presents a different problem.

In the north, the natives are mostly full blood and maintain their racial purity. Contact with the white man on Station, Mission and Settlement raises problems of diet and sanitation which must be faced. The white population cannot expect to keep its own health and standards while living side by side with a population which, torn from its traditional mode of life, has as yet nothing to substitute for it.

Experience has shown that if properly directed, the native in the Kimberleys can and will use the white man's sanitary conveniences. Much remains to be done if the native is not to become a health risk to the population as a whole.

Leprosy in the Kimberleys is apparently increasing. This was revealed by a survey during 1950 as a result of which 60 cases were notified.

The details of notification since 1946 are as follows :—

Year.	Cases Notified.
1946	27
1947	38
1948	49
1949	51
1950	60

Account must be taken of the fact that the number of annual notifications will depend on the throughness of the search for new cases. It is important that a Medical Officer should make periodic and repeated inspection of natives.

The Southern natives, 98 per cent. of whom are half-castes or have a varying proportion of white blood, have a total population of approximately 3,600 and an estimated birth rate of 36 per 1,000, which is over 50 per cent. higher than the white. The higher rate of natural increase makes them a growing minority problem.

Most of the males are employed by the white population on farms or in townships. They live in fairly close geographic proximity to the whites, but there the resemblence ends. Although those earning Award Rates of wages have to pay Income Tax and Social Service contributions and all draw Child Endowment for the children, not one has as yet been provided with a house by the State Housing Commission although they contribute to the country's finances whence the State Housing Commission draws its funds.

Denied access to their former hunting grounds which are now devoted to the white man's agricultural and pastoral pursuits, they are compelled to work for the white man for their livelihood and yet denied a communal life with him. They are condemned to live in shack and shelter on the fringe of townships and only too frequently the only place where there is water and material from which they can build their shelters is the town's sanitary site.

Need one be surprised at the standard of hygiene and sanitary conscience of a community brought up on an area devoted to the deposition of the white man's rubbish and excreta.

The policy of the Department of Native Affairs is stated to be one of assimilation of the native into the white community. Many whites are, not unnaturally, averse to this when they see the conditions under which the natives are living now. A contrary policy has been proposed of placing them in large scale settlements. But the public health problems inseparately associated with them will not be solved by the creation of a new Mason-Dickson line behind which they might live their sub-standard life in partial oblivion.

There can be no doubt that the initial step to be taken in their habilitation is the provision of housing approximating in standard to that of the rest of the community, and the education of the young at any rate among them, in the ability to live therein. It is impossible to teach any man to use a tool unless he be given the tool with which to practice. It is not possible to learn the art of living on a sanitary site.

There can be no doubt that the majority of natives are at the present incapable of using properly, housing accommodation which is up to the white standard. Nevertheless unless efforts are made to educate them in its use they will never learn.

It is suggested that a beginning be made by providing them with camping conditions that conform to the Camps and Caravan Regulations of the Health Act. When a family has shown by its usage of the facilities so provided that is capable of appreciating and not misusing these facilities, steps should then be taken to provide the family with a house of European standard.

" Dull would he be of soul who could pass by " this pathetic heritage of the white man's irresponsibility. The state of this increasing racial minority is pregnant with dangerous social consequences and its risks to the public health must be recognised by this Department.

CANCER RESEARCH BRANCH.

Recently the State has been fortunate in the fact that two distinguished British cancer research workers—Professor W. E. Gye and Professor Ida Mann—have come to reside in the State.

Professor Gye was formerly the Director of the Imperial Cancer Research Fund, London.

Professor Gye was anxious to continue his investigation into the virus origin of cancer which he had been compelled to interrupt on the occasion of his retirement in London.

The State Health Council recommended that facilities be provided for this research to continue in Perth and the State Government gave its approval on the 14th December.

As a result of negotiations with the Department of Agriculture the use of premises at the Animal Health & Nutrition Laboratory was agreed to.

One must express appreciation to the Department of Agriculture and to Dr. H. W. Bennetts, Principal of the Animal Health & Nutrition Laboratory for their interest and co-operation.

It is anticipated that this work will commence early next year.

In conclusion my thanks are due to the loyal co-operation of all members of the staff throughout the year in which maximum efforts have been needed in the planning of future developments.

(Sgd.) LINLEY HENZELL,
M.D. (London), B.Sc., D.P.H.
Commissioner of Public Health.

APPENDIX I.

ANNUAL REPORT FOR THE YEAR 1950 BY THE DIRECTOR OF MEDICAL LABORATORIES.

To the Commissioner of Public Health,

I have the honour to submit a report on the work of the Public Health Laboratories and the Medical Laboratory Service of Western Australia for the year 1950.

General Staffing.—The positions of medical bacteriologist and medical biochemist, approved early in 1949, remained vacant throughout the year. No candidates with the exact training and experience required applied for these appointments, presumably owing to the low salary scales attached to them. It was considered to be undesirable to recommend the appointment of any candidate without the requisite background in a new organisation which requires the highest qualifications in its senior members for the training and build-up of junior staff.

The vacancies in senior staff considerably retarded progress in the development of routine work and in the initiation of research. On the other hand the recruitment of technical staff has shown continued progress. One histology technician with special experience in neuro-pathology has joined the histo-pathology section, four science graduates have joined the bacteriology, haematology and biochemistry sections, and one haematology technician was appointed. In addition three partly trained laboratory assistants were recruited to complete their training with a view to filling vacancies as technicians in an expanded laboratory service. A stores clerk was appointed to deal with the rapidly expanding and extremely complex requirements of the P.H.L. and K.E.M.H. laboratories. The office staff of the P.H.L., consisting of two typists, was at the end of the year, showing its inability to cope with the continuously increasing volume of work coming from the P.H.L. and K.E.M.H. laboratory. The general typing of all reports from the biochemical section could not be undertaken. The position was further aggravated by the resignation of two typists during the year.

In the recommendations separately made at the end of the year, the following additional staff was recommended : a Haematologist (medical), a Museum Technician (junior), a Haematology Technician (junior) and a Secretary Typist.

The Cadet Training Scheme.—One cadet trainee and two Reconstruction trainees continued their training and one new cadet trainee was appointed. The system by which they continue their training in science at the Technical College and their practical training in the various sections of the P.H.L. works well, and all trainees and laboratory assistants in training with them have shown good progress despite the relative shortage of senior trained staff to direct them.

The Staffing of Section Laboratories.—With senior trained technicians in almost all the sectional laboratories and a better allocation of junior technicians, improvements have been shown in the organisation and development of routine work, which has not been hampered as in 1949 with too many staff changes. The haematology section has suffered most from staff changes, but ends the year in a sounder position.

The biochemical section has, however, lost Miss L. Silvester, the senior biochemistry technician, who proceeded to Sydney on long study leave in November, 1950. This section will be under the charge of a junior science graduate technician until the appointment of a medical biochemist or the return of Miss Silvester at the end of 1951.

The King Edward Memorial Hospital Laboratory.—In the absence of Dr. G. A. Kelsall, the honorary haematologist, on study leave in Sydney, Dr. J. Watson has acted in his place until Dr. Kelsall's return, since when the work has been largely shared. The temporary technician appointed in 1949 has done very sound work and has helped very materially in the development of the work of this laboratory. A partly trained laboratory assistant was appointed to help in the expanding routine laboratory work and the accurate bleeding of large numbers of patients in the clinic. A vacancy for a biochemistry technician was made but was not filled at the end of the year. Considerable improvements were made in the equipment of the laboratory and additional bench work was planned for biochemical investigations.

A report which is included later in this report, shows that a satisfactory start and considerable progress has been made in developing the various functions of this laboratory.

Dr. A. T. Pearson, the Police Surgeon, continues to carry out the post-mortem examinations and the histo-pathological work associated with them is done by the Pathologist, P.H.L.

The Medical Laboratory Service of W.A.—Development of this laboratory service consists largely in the extension of the scope of examinations carried out for regional hospitals and practitioners throughout W.A. and the provisional and in some cases detailed planning of laboratories in the new hospitals to be built. Outline plans were prepared for the new laboratories in the extension of the K.E.M.H., the Tuberculosis Clinic and the proposed new Chest Hospital. Provisional and then final plans were prepared for the laboratory at the Pinjarra Hospital, and modification of these were discussed for other regional hospitals.

The material for standardised specimen containers is still in short supply, but as it becomes available in sufficient quantities some improvement has been made in the containers sent out for the collection of specimens.

A fair number of specimens are still received destroyed, damaged or in poor condition due to delays in transport, excessive heat on the journey, defective packing or misunderstanding of the type of material required for a specific examination. With the issue of duplicated instructions and better containers some improvement has occurred. An optimal postal service cannot be reached until all postal containers are available in quantity and all their users are instructed either by leaflet or by correspondence in their correct use.

The Fremantle Hospital and Princess Margaret Children's Hospital laboratories remain outside the planned laboratory service for W.A. Serological investigations and other work are carried out for them, and Fremantle Hospital laboratory was helped during a period of staff shortage by the transfer of three junior technicians over a period of nine weeks. A graduate biochemistry technician appointed to the Fremantle laboratory was given a preliminary period of instruction in the biochemistry section of the P.H.L. before commencing work at Fremantle.

Dr. L. Szaloky was appointed as a trainee pathologist late in the year to work through all branches of the P.H.L. before becoming available for an appointment as pathologist elsewhere.

Laboratory Accommodation.—No new rooms were added to the laboratories, but minor structural alterations were continued. A separate inoculation room was divided off from the main clinical pathology laboratory to try out the division of this large laboratory into separate draught-free working rooms with increased bench space. The division was completely successful and plans for further subdivisions were made. New benches were installed in the biochemistry laboratories ; the museum preparation room was blacked out to be used for photographic processing. Additional bench space was made by adding island benches. Fluorescent lighting was installed where lighting was defective. Plans for utilising two further rooms for the biochemistry division, and a dark-room for clinical and museum photography were submitted late in the year.

Animal House Accommodation.—The accommodation for animals in the R.P.H. animal rooms became more congested. No animal houses are provided at the K.E.M.H. laboratory. Without space to breed animals the supply of animals fluctuated with the variable excess available from other laboratories and the erratic supplies of small breeders. During several periods of the year experimental animals were in short supply and work had to be curtailed. Animal diseases in epizootic form in our relatively small stocks were fortunately uncommon, but our animals were constantly at the risk of being infected from animals brought in from various districts of Western Australia.

The unsatisfactory state of animal supply and the absence of knowledge of their local infections forced the consideration of the provision of a breeding station for experimental animals under the control of the P.H.L. where healthy stocks could be maintained, the breeding of each animal type varied according to requirements, and the diseases peculiar to each type studied. Provisional approval was given to this scheme pending the consideration of many details.

Laboratory Equipment.—A larger and more efficient still with a high yield was installed in the laboratories of the R.P.H. to deal with increased needs and the smaller still was moved from the laboratories of the R.P.H. to those in the K.E.M.H. A special research model microscope, a special camera for clinical and museum photography, a large rotary microtome, a vacuum embedding bath, a paraffin oven, a Kahn shaking machine, a pH meter, a photo-electric haemoglobinometer, a grey-wedge photometer, an absorptiometer and an inactivating bath were the additional major items of equipment added to the P.H.L. during the year. A spectrophotometer and flame photometer were investigated and eventually ordered.

Routine Work.—The subjoined table shows an overall increase in the number of examinations carried out of 57.3 per cent. compared with the figure for 1949. Owing to the increasing complexity of the methods used and the preparation that is required for them, the actual increase of work done by the laboratories is very much higher.

Two hundred and forty-nine post-mortem examinations were performed and 3,746 biopsies were examined by the Pathologist, Dr. T. R. Lubbe ; 31,357 blood counts and other examinations were carried out in the haematology division ; 15,573 sera were examined for syphilis, gonorrhoea, typhoid, typhus and other antibodies ; 3,130 throat swabs were examined for diphtheria ; 1,544 smears for gonorrhoea, 948 smears for leprosy ; 1,697 water examinations and 61 milk examinations were made in the Public Health bacteriology section. The 11,607 biochemical investigations covered a still wider field. In the medico-legal section improvements were made in the identification of blood stains by absorption technique.

ROUTINE EXAMINATIONS, 1950.

——	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
Pathology and Bacteriology	4,942	5,733	6,543	5,085	6,884	5,869	6,754	6,956	6,901	6,892	7,266	5,916	75,741
Biochemistry	652	687	1,177	807	1,127	939	1,052	1,132	1,112	1,033	1,187	702	11,607
K.E.M.H.	645	580	1,104	800	1,200	1,247	1,119	1,204	1,030	1,510	1,278	1,354	13,071
Total	6,239	7,000	8,824	6,692	9,211	8,055	8,925	9,292	9,043	9,435	9,731	7,972	100,419

Bacteriology, Clinical.—Within the limitations imposed by the present staff of this section, steps were taken in a general way to form some estimate of the impact of treatment by sulpha-drugs and antibodies on the work of the bacteriology section. Without any information supplied by clinicians sending specimens for examination and without the help of active pathology registrars to find out the treatment received by patients before the specimens are sent, comparisons can still be made between the bacterial flora of the pre-antibiotic and post-antibiotic eras and the relative sensitivity to antibiotics of the organisms isolated from different sources.

The most striking changes have occurred in the flora of respiratory and urinary infections. There has been a marked reduction in gram positive bacteria in respiratory infections, those remaining being almost invariably penicillin-resistant. At the same time there has been a considerable increase in gram negative organisms noticeably in coliform bacilli and Klebsiella. Urinary infections on the other hand show a marked increase in Ps.pyocyanea isolations. Experimentally certain concentrations of penicillin markedly increase the growth of Ps.pyocyanea. The increase of infections with the latter organism can be at least partly attributed to the injudicious use of penicillin.

Penicillin sensitivity tests on Staphylococci showed approximately 60 per cent. of the strains tested to be resistant. The penicillin-sensitive strains were isolated mostly from out-patients and the penicillin-resistant strains from in-patients. These latter patients had either been treated with penicillin or in some cases infected in the hospital with penicillin-resistant organisms. The examination of the nursing and medical staff for carriers of penicillin-resistant Staphylococci in nose, throat or skin is desirable but not practicable at the moment. Penicillin-resistance in Streptococci was, as expected, found in a smaller percentage of strains, less than 40 per cent. It has, however, the same implications.

Streptomycin-sensitivity tests showed a 50 per cent. streptomycin-resistant rate in strains of Ps. pyocanea, 30 per cent. resistant rates in E.coli, Proteus and Straphylococci and a 16 per cent. rate for Streptococci.

The development of streptomycin-resistance presents problems and similar dangers to that of penicillin-resistance. In some cases it was found that much higher concentrations of streptomycin in urine, serum and cerebro-spinal fluid were capable of eliminating a partly resistant strain of Ps.pyocanea, but this form of treatment has obvious limitations.

The bacteriological problems raised by the use of sulpha-drugs and antibodies necessitates a much closer co-operation between clinicians and laboratory workers if they are to be used as efficient therapeutic agents and not as the producers of intractable infections.

An analysis of the cytology and general bacteriology of ureteric catheter specimens submitted to the laboratory showed that out of 795 specimens examined in only 58 specimens was an appreciable cellular exudate found. From 47 of these specimens various organisms were cultured and cultures were obtained from nine specimens without cellular exudate. The mere presence of a few organisms in catheter urines, other than contaminants, does not necessarily indicate an infection. The reasons for the examination of the 737 catheter urines without cellular exudate is not clear.

Wassermann Reactions are still carried out in weekly batches, but all bloods for W.Rs are now Kahn-tested on the day they are received and reported to avoid the delay in diagnosis associated with weekly performance of the W.R.

Bacteriology, Public Health.—Examinations for the Public Works Department were carried out in connection with the pollution of the Swan River in addition to the routine water examinations for this department and various health authorities. Counts of total bacteria and examinations for the presence of coliform bacilli at regular intervals from a large number of fixed sites should give valuable information relating to the increase or decrease in pollution if estimated in conjunction with season, rainfall, etc., over a sufficiently long period. From a bacteriological point of view a river passing through a town can not give entirely safe bathing. The development of disinfected swimming pools in or near urban areas is the logical result of the knowledge of water bacteriology.

The diagnosis of abortus fever is at present dependent on the demonstration of agglutinins to a highly agglutinable strain of Brucella abortus to a titre of 1 in 80 or over with a rise in titre at subsequent examinations. Nineteen cases were provisionally diagnosed on the above basis. No strains of Br.abortus were isolated from the blood of suspected cases and no survey has been made of the general population to show the presence of " abortus " agglutinins at lower titres.

The classification of strains of C.diphtheriae has been checked only for part of the year. Using intra-dermal tests in guinea pigs few of the isolated strains appear to be highly toxigenic. Little interest seems to have been aroused by culture methods used for the diagnosis of gonorrhoeal infections and they have been discontinued for the present.

Bacteriology, Tuberculosis.—A second technician was appointed to the tuberculosis laboratory in January, 1950, to cope with the constantly increasing routine work. The total number of examinations was 5,572 including 1,255 cultures and 358 guinea pig inoculations. This showed an overall increase in specimens examined of 35 per cent. 7.3 per cent. of the sputa and 7.7 per cent. of the gastric contents showed organisms morphologically resembling Myco. tuberculosis. Thirty-four per cent. of the guinea pigs inoculated developed tuberculous lesions. The necessity of using both guinea pig inoculation and culture was again confirmed. In those cases which gave positive results by one or other or both methods, 17.2 per cent. gave positive cultures only and 27 per cent. only positive infections in guinea pigs. Where the culture only is positive, the organisms are inoculated into guinea pigs to test for the presence of non-pathogenic strains. Four per cent. sodium hydroxide was used throughout to liquefy the tuberculosis material and its effect on the viability of the organism was checked in sputa containing varying numbers of Myco tuberculosis. Equal quantities of sputum and four per cent. sodium hydroxide were incubated for periods varying from 24 hours to seven days. After neutralisation, all specimens up to the seventh day specimen gave similar positive cultures in three or more weeks. Sputa kept for three months in the refrigerator and then treated in the same manner with four per cent. sodium hydroxide showed similar but slightly delayed growth.

The routine examinations for Myco. leprae were transferred to the tuberculosis laboratory.

Haematology.—This section has had several changes of staff during the year which has delayed progress. A total of 19,507 general examinations other than blood groupings and B.S.Rs has been carried out with improved standards of accuracy. It still receives many unnecessary requests for full blood counts and absolute values when a haemoglobin estimation and red and white cell counts show a completely normal blood picture. The percentage of normal estimations and counts varies from 56.6 per cent. of leucocyte counts, 42.3 per cent. haemoglobin estimations, and 38.3 per cent. erythrocyte counts to 34.5 per cent. differential counts and 28.3 per cent. haematocrits. The total number of cases of pernicious anaemia examined was 137, of leukaemias 14 and of polycythaemia 5. Many of the cases of pernicious anaemia were under control and showed approximately normal blood pictures. The age incidence commencing at 30 years, rises slowly to 40 years, more rapidly to 45 years and then very steeply to a maximum at 70 years.

Improved methods have been available for haemoglobinometry, and a Fisher photo-electric haemoglobinometer has been taken into routine use. Before accepting it as the method of choice for routine work, " standard blood " was flown over from the Standards Laboratory, University of Sydney, and with this and routine bloods checked against it, the Fisher instrument was used alongside a M.R.C. grey-wedge photometer and a Hilger absorptiometer previously calibrated. The grey-wedge photometer was found to be more accurate than other visual colorimetric instruments. The absorptiometer was an accurate instrument but could not be used for rapid reading of large numbers of bloods. The Fisher instrument combined accuracy with speed.

Blood grouping, both ABO and Rh, is not only being used in maternity cases where there is a history of abortion, stillbirth or neo-natal death, but is being extended as a public health measure to all expectant mothers desiring it. The Rh grouping is carried out with anti-D serum. Cases requiring further investigation are transferred to the K.E.M.H. laboratory.

Pathology.—This section showed rapid progress during the year and a second pathology technician was appointed. In addition to the routine post-mortem section and biopsy work, the frozen section work for rapid surgical diagnosis was extended and smear diagnosis for malignant cells was used not only for exudates and sputa but on material from the operating theatres, particularly for cases of suspected brain tumour. Equipment has been improved and storage space increased within the limits of the laboratories. Progress has also been made in the collection and processing of material suitable for the histo-pathology classes of the future medical school and other training purposes.

Out of the 380 cases of cancer diagnosed by sections, breast cancer in the female shows, as usual, the highest incidence. Uterine cancer is surprisingly more frequent than cervical cancer. Skin cancers are common and although more common in the male, do not show the same proportionately high male incidence as in 1949. Cancer of the lung, six cases in females, eight cases in males, has not noticeably increased. Rectal, vesical and prostatic cancers show moderate incidence. The lack of statistical significance in dealing with small numbers of cases is shown by the reversal of the preponderance of melanomata in the female noted in 1949 to the male preponderance in 1950.

Pathological Museum.—The structural defects in the ceiling of the room housing the museum remained uncorrected throughout the year, and no development plans could be put in operation there on this account. The work of preparing material, indexing, describing, sectioning and re-mounting, however, made very good progress. One half of the old material taken over from the Perth Hospital museum was fully re-investigated and re-mounted. Two hundred and twenty new specimens underwent preliminary preparation and were tanked until all old material is remounted. Owing to the difficulty of obtaining glass specimen jars, mounting in Perspex is being developed as the method of choice and attempts are being made to acquire sufficient Perspex to tide over periods of shortage. The advantages of Perspex over glass for certain general laboratory purposes has been demonstrated by the production of racks, trays, etc., to the design exactly suited to their requirements. Provisional dark-room facilities were provided to allow photographic work to commence, and plans for clinical photography in black and white and later in colour were prepared.

An artist from the Government Printing Office has done a lot of the preliminary work in developing a style of illustration for wall panels in the museum to illustrate sections on haematology, protozoology, etc., and a small series of illustrations was completed at the end of the year.

When the defects in the museum room are rectified and an additional technician is available, relatively rapid progress should be possible. The mere acquisition of bottled specimens in numbers, however, is not the principal requirement of a museum. Every specimen must have a full and accurate history, photographs and X-rays, where appropriate, and full pathology notes on the macroscopic appearances and section notes with photomicrographs. Sections of all specimens must be available with microscopes to study them.

Plans for developing the museum in a series of bays with improved lighting, wall-panelling, demonstration stands for X-rays and coloured transparencies, and a microscope bench, a section cabinet and microscope cupboards were prepared.

King Edward Memorial Hospital Laboratory.—The following is a summary of a report submitted by Dr. J. Watson on the work of this laboratory :—

> " The largest section of the work has been in serology and haematology and the original investigations associated with these. The maintenance of the hospital blood bank, some bacteriology and biochemistry were also carried out.
>
> All patients admitted to the hospital through the ante-natal department and all public cases admitted direct are given a complete ABO and Rh examination and Kahn test with antibody definitions, antibody titrations and Coombs tests when required. Private cases admitted to the hospital are similarly investigated on request. This service is available to practitioners and their patients throughout the State whether the patients are treated privately or otherwise. By this means it is hoped that a relatively complete record will be eventually established of the blood groups of all child-bearing women and the risks run in bearing children of incompatible blood groups.
>
> Since this service was inaugurated in July, 1950, there has been a steady increase in the number of practitioners using it. Two thousand five hundred and thirty-eight public and 186 private cases were investigated.
>
> The blood group pattern varies slightly from that seen in 1949. Out of 2,538 bloods, 40.2 per cent. were of Group A, 10.6 per cent. of Group B, 45.9 per cent. of Group O, and 3.3 per cent. of Group AB. So-called Rh-negative bloods numbered 17 per cent. Forty-one of these showed the presence of antibodies. Where antibodies are detected in expectant mothers, titrations are done monthly and later fortnightly during pregnancy, the husband's gene structure is investigated and the infant's blood is examined after birth when haemolytic disease occurs or is suspected. A study of antibody titrations during exsanguination transfusions is proceeding and an investigation into the presence of haemolysins as distinct from agglutinins in expectant mothers has been commenced."

Doctor and Mrs. R. L. Kirk of the Department of Zoology in the University of Western Australia supported by a grant from the National Health and Medical Research Council have carried out in these laboratories the bench work of a study of " Iso-immunisation in the A–B–O– Blood Groups " and submit the following outline of their investigations :—

> " Work on this project is continuing along the lines of a fuller statistical examination of the consequences of iso-immunization in O–group Rhesus-positive women to the A–group antigen in cases of heterospecific pregnancy. The analysis is the outcome of earlier work in England by Waterhouse and Hogben (Brit. J. Social Medicine 1.1947) which indicated a 25 per cent. deficiency of children in families where the mother was Group O and the father Group A, compared with families where the mother was Group A and the father Group O.
>
> During the last year three approaches to the problem have been made, and these are now being taken to completion. The first was a family survey of a random sample of Group O and A women in the metropolitan area ; the second was a correlation between agglutinin titres and child-bearing history in a selected group of 100 O–group women. The third approach was a detailed age and parity analysis of record cards of O–group women compared with other groups attending the clinic at the King Edward Memorial Maternity Hospital during 1948, 1949 and 1950."

The Laboratory Advisory Committee.—One meeting of this committee only was held. The difficulty in finding suitable resident pathology registrars was again stressed. It was considered that when the first post-war batches of medical students graduated and the supply of hospital residents became more plentiful, suitable registrars would be found. The inadequacy of case histories sent with specimens was again discussed.

The Society of Medical Laboratory Technicians.—The West Australian branch of this Society was developed as the result of arrangements made by Mr. J. Findlayson, chief pathology technician. The training of technicians will commence in 1951 for the diploma course of the Society. The practical technical training given should be of considerable benefit to all medical laboratory technicians eligible to enter for it, including the cadet trainees and laboratory assistants of the P.H.L.

Contacts with Medical Laboratories in Australia.—The Director, whilst on leave, visited laboratories in Adelaide, Melbourne, Sydney and Brisbane to investigate the problems of recruiting senior staff, and to obtain and compare information on numerous aspects of laboratory work. He also attended the annual general meeting of the Australian Association of Clinical Pathologists in Brisbane.

Mr. J. Findlayson attended the annual general meeting of the Society of Medical Laboratory Technicians in Melbourne and visited laboratories in Sydney.

The Future of the Public Health Laboratories in the Royal Perth Hospital.—The development of laboratory work in all sections of the Public Health Laboratories and the necessary increase of staff to deal with it are likely to cause congestion in the present range of laboratories in two years time or less. Plans for the best utilisation of all available space have been made, but partly owing to the delays in providing the new biochemical laboratories in the new wing, the difficulties arising from the constant demand for more elaborate laboratory investigations are causing serious anxiety for the future. Many laboratory problems in public health cannot at present be considered. The question of the planning and building of new public health laboratories separate and distinct from hospital laboratories now requires very urgent consideration.

Staff Changes.—The following appointments and resignations have occurred :—

Appointments—

Miss M. Cooke, Technician, 6th January, 1950.
Mr. R. Bullock, Technician, 24th January, 1950.
Mrs. P. Davidson, Temporary Laboratory Assistant, 8th February, 1950.
Mr. F. Le Faucheur, Clerk, 22nd February, 1950.
Mr. A. Kelly, Cadet Trainee, 22nd May, 1950.
Miss L. Telfer, Laboratory Assistant, K.E.M.H., 29th May, 1950.
Mr. C. Manessis, Laboratory Assistant, 7th August, 1950.
Miss A. Battye, Biochemistry Technician, 14th August, 1950.
Mr. R. Gelle, Laboratory Assistant, 17th August, 1950.
Miss S. Duffield, Typist, 30th August, 1950.
Miss J. Day, Haematology Technician, 18th September, 1950.
Dr. L. Szaloky, Trainee Pathologist, 6th November, 1950.
Miss J. Lockyer, Typist, 6th November, 1950.
Mr. T. Dockrill, Histology Technician, 14th November, 1950.
Miss W. Mead, Biochemistry Technician, 16th November, 1950.

Resignations—

Miss C. Goldie, Biochemistry Technician, 25th May, 1950.
Mr. M. Croome, Technical Assistant, 22nd June, 1950.
Mr. R. Bullock, Technician, 21st July, 1950.
Mrs. P. Davidson, Temporary Laboratory Assistant, 15th September, 1950.
Mrs. D. Mossenson, Typist, 1st September, 1950.
Miss S. Duffield, Typist, 13th December, 1950.
Miss L. Silvester, Biochemist, November, 1950 (Study Leave).

Acknowledgments.—I wish to express my appreciation of the work done and the help received from all members of the laboratory staff who have carried out an ever-increasing volume of work, and particularly of the work of Mr. A. Drummond in the handling of all technical matters.

I desire also to place on record my appreciation of the understanding and help given by the Commissioner and Deputy Commissioner of Health, the Under Secretary, Assistant Under Secretaries and many other members of the Public Health Department staff in all the problems I have brought to them.

W. A. YOUNG,
B.Sc., M.B., B.S., M.R.C.S., L.R.C.P., D.T.M. & H.
Director of Medical Laboratories,
Western Australia.

APPENDIX II.

REPORT FROM THE DIRECTOR, TUBERCULOSIS CONTROL BRANCH TO THE COMMISSIONER OF PUBLIC HEALTH.

Sir,

I have the honour to submit a report of the activities of the Tuberculosis Control Branch for the Year ended 31st December, 1950.

It has been my object to retain a well-balanced programme covering the five aspects of Tuberculosis Control, *i.e.* :—

1. Prevention.
2. Case Finding.
3. Medical Care and Isolation.
4. Social and Economic Protection.
5. After-care and Rehabilitation.

1. PREVENTION.

Considerable attention has again been paid to housing and living conditions of sufferers and an attempt has been made to improve this when necessary.

In these days of shortage of accommodation it has not been possible to do all that is required in this respect.

Particular effort has, however, been expended in placing patients discharged after treatment, the object being to provide a healthy environment in order to prevent relapse and re-admission to hospital.

Acknowledgment is herein made to the assistance given by the State Housing Commission whose Lady Welfare Officer, Mrs. M. Eichorn, reports a placement of over 60 patients during the 12 months (exclusive of those obtaining War Service Homes).

B.C.G. Vaccine.—The use of the vaccine does not provide a complete solution to the tuberculosis problem by providing an immunity to the disease, but it does give an increased resistance for some years.

Thus, while its general use is restricted due to limited staff, it must be employed for those persons more at risk, and those age groups of the population more susceptible to tuberculosis.

This has restricted it for the time being, mainly to negative Mantoux reactors amongst nursing personnel and contacts of known cases of tuberculosis. It is particularly valuable, in the latter regard, for children under two years.

It is similarly considered more important in the 14–25 years age group. A start has been made in this group to vaccinate the " school-leavers " in metropolitan schools.

The Tuberculosis Physician reports a total of 1,270 vaccinations during the year in the metropolitan area. In addition, 1,087 aborigines were vaccinated.

" *Moriston.*"—A development of some importance during the year took place with the purchase of a home in Claremont for use as a " preventorium " for children.

The lack of such had previously been a gap in our control measures.

Its main purpose is the care of infants of tuberculosis mothers, and children requiring isolation from a source of infection during the period required for B.C.G. vaccination to " take."

The home was opened at the end of November and at 31st December, 1950, six babies were being cared for. Further use of these activities will depend on some structural alterations to the existing building.

1. and 2. *Prevention and Case Finding.*

Legislation.—The Health Act Amendment Act, 1950, became law in December of the year, and allows for compulsory X-ray examination for tuberculosis of all persons over the age of 14 years of any class or classes specified.

It is considered that this, together with the previously granted power of restraint of the recalcitrant patient, now completes the necessary basic framework of legislation in this State for Tuberculosis Prevention.

2. CASE FINDING.

Case finding is one of the major activities of the Perth Chest Clinic, but this activity also extends well beyond the work of the Clinic, *e.g.*, in the X-ray of hospital in- and out-patients of the Royal Perth Hospital.

The emphasis, of course, in case finding is on priority groups in which the maximum number of cases are discovered relative to the effort expended. This is with the object of making the maximum use of personnel and equipment available.

For this reason, we concentrate on the following groups :—

(a) Patients referred to the Chest Clinic, with symptoms referable to the chest, by practitioners.
(b) Hospital In-Patients and Out-Patients (in liaison with the Royal Perth Hospital).
(c) Contacts of known cases.

Following the above groups, case finding is extended to Mass Radiography of the general public and special groups.

(a) The Tuberculosis Physician reports that the group referred by general practitioners continues to be the most productive in numbers of active cases discovered. The percentage remains over 3 per cent. This has continued ever since the Clinic commenced in May, 1948.

(b) The number of cases discovered by the routine X-ray examination of Hospital In- and Out-Patients at the Royal Perth Hospital, by the personal efforts of the Superintendent (Dr. Roland Anderson) again discloses that the survey of hospital population shows three to four times the number of active cases per thousand as compared with that of the ordinary adult population. In 8,012 In-Patients examined from 1st July, 1949, to 30th June, 1950, 8.2 patients with active pulmonary tuberculosis were discovered per 1,000. (6.6 active, 1.6 active not proven.)

This finding is so definite that it is proposed to instal X-ray equipment for mass radiography in the other large hospitals in the metropolitan area.

(c) As the follow-up has been somewhat disappointing, a start has been made on a complete register of the contacts of known cases who will then be circularised for regular six-monthly X-ray examinations. The extent of this undertaking must be gauged by the fact that each notified case has an average of three contacts. It is considered that each contact must be followed for a period of five years after termination of exposure to active disease.

Country Practitioners.—During the year there has been an increase in case finding at all country centres as free X-ray facilities are now available for suspect cases of pulmonary tuberculosis at all Government Hospitals with the necessary equipment. This has resulted in a great increase in the number of X-ray films referred from the country to the Chest Clinic for interpretation.

Films were received for a total of 1,041 patients.

Further practitioners have been appointed as part-time Tuberculosis Officers where this has been considered necessary, so that these officers now exist at Albany, Bunbury, Collie, Geraldton, Northam and Kalgoorlie. They are Doctors A. E. Vivian, W. Lawson Smith, A. F. Walsh, A. J. Beaumont, A. McL. Robinson, and A. B. Webster respectively.

Mass Radiography.—The Tuberculosis Physician reports a considerable increase in persons examined at the Perth Chest Clinic during the year ; over 23,000 exposures having been made.

A total of over 70,500 people have now been X-rayed by the Tuberculosis Control Branch since the Clinic opened in May, 1948.

There has been no need to publicize the fact that this facility is available free of charge to the general public ; as it publicizes itself. The number of volunteers has now increased to over 1,000 per month.

Although the figure of 2.8 active cases per thousand is now reported by the Tuberculosis Physician, this apparent slight increase is probably due to the increased use of the more sensitive methods of bacteriological investigation ; so that more cases are reported " active " rather than that there is any increase in the incidence of the disease.

The X-ray examination of displaced personnel showed a lesser degree of active disease this year—probably due to increased efforts in Europe by the Commonwealth Authorities, but the incidence, 3.8 per 1,000, is still higher than that of our native population.

Special Groups.

Survey of Aborigines.—A separate full report has been submitted of this Survey of Aborigines of the Kimberley and Port Hedland districts during the months August to November. A short summary is included herein :—

3,209 aborigines were examined.
2,657 Mantoux tests were done.
1,191 were X-rayed.
1,087 were given B.C.G. vaccine.

Twenty-six centres were visited, covering seven missions, 46 sheep and cattle stations and five towns—Wyndham, Derby, Broome, Fitzroy Crossing and Marble Bar.

It was demonstrated that (using aerial transport) a satisfactory itinerary could be maintained.

A standard 85/30 portable X-ray unit was employed, taking 17 in. x 14 in. films, together with a portable generator and collapsible dark room. The total weight of equipment was restricted to 1,400 lb.

The results of the survey were most satisfactory, as only 15 cases of pulmonary tuberculosis were discovered, of whom three were considered active.

The Mantoux conversion rate did not show any marked dissimilarity from existing normal white figures.

3. MEDICAL CARE AND ISOLATION.

Lack of beds for cases is again our biggest problem and it remains a constant reproach to our community that sufficient beds are just not available for the immediate hospitalisation of all those cases of pulmonary tuberculosis requiring investigation and treatment.

Plans are continuing for the erection of a new chest hospital in the metropolitan area, but it appears that it will be several years before this objective is reached. In the meantime, an effort is being made to make the best use of existing facilities and " economy of bed usage " is practised to get the maximum benefits from hospitalisation of patients. Priority of admission is given when early response to treatment is anticipated and when conversion of a positive sputum (an infectious case) to a negative sputum (a non-infectious case) is expected.

It is intersting to point out here, taking this procedure into account, that as at 31st December, 1950, migrants occupied 17 per cent. of the Wooroloo beds (including Displaced Personnel, Landing Permit Holders and non-assisted migrants).

A most encouraging aspect in the report by the Medical Superintendent of the Wooroloo Sanatorium is the fact that, with the increasing use of chemo-therapy, streptomycin and Para-Amino Salicylic Acid, the percentage of arrested cases has almost doubled within the last two years.

Dr. Elphick also confirms the effectiveness of the case finding programme insofar that patients discovered at an early stage in the disease are responding quickly to treatment.

The Thoracic Surgical Team, Mr. F. Clark, surgeon, and Dr. Gilbert Troup, anaesthetist, continues to make a fine contribution to successful treatment.

The classical Thoracoplasty is now seldom employed and Mr. Clark has now standardized on a modified form embodying a " plombage " with plastic spheres.

This often enables a single operation to produce the same effect as previously obtained by three separate operations.

Acknowledgment is herein made of this valuable developmental work in the surgery of pulmonary tuberculosis.

The volume of Out-Patient treatment continues to expand.

Eighty-eight patients receive Artificial Pneumothorax refills at the Perth Chest Clinic and Fremantle Hospital. This necessitated almost double the number of refills at these clinics during the year as compared to the Wooroloo Sanatorium.

Royal Perth Hospital.—The availability of beds by the courtesy of the Medical Superintendent and the Board of Management has done a lot to ease the bed situation.

Thirty-six beds are in the charge of the Medical Officers of the Chest Clinic for investigation and treatment of early cases and eight beds are available for surgical cases.

The loss of any of these beds would be disastrous at this stage of incresing tempo of case finding activities.

Princess Margaret Hospital.—The Chest Clinic continues to function on a Friday morning under my personal supervision.

In-Patients.—There were 14 admissions during the year, of whom eight were diagnosed and admitted as a result of Mantoux testing of contacts. The latter results in disclosure of disease at an early stage. As a result, only two deaths were recorded during the year. Eight of the admissions were in children under three years of age. Pulmonary tuberculosis does not appear to be a problem in the 3–14 years age group in this community.

4. SOCIAL AND ECONOMIC PROTECTION.

The implementation in July of the payment of the Tuberculosis Allowances under Section 9 of the Commonwealth Tuberculosis Act, 1948. is a marked step forward in tuberculosis control.

It has removed the T.B. sufferer from the general category of the invalid pensioners and allows of more generous financial assistance, particularly to family units.

This provision of economic security now allows the sufferer to undergo treatment with a minimum of worry on this account and there is now little hesitation in accepting treatment.

5. AFTER-CARE AND REHABILITATION.

The financial provisions of the Tuberculosis Act, allowing of some wage earning, extra to the Allowance, has removed the previously existing serious deterrent to rehabilitation schemes.

In this State we are very fortunate to have the co-operation of the voluntary agency in tuberculosis welfare, the Tuberculosis Association of Western Australia, which has now adopted rehabilitation as its main activity.

This resulted in the Association establishing a Sheltered Workshop in Perth in February this year. This has been a great boon and has allowed the placement of an average of twenty sufferers per working day, working at varying periods from two to four hours. The success of this Workshop has resulted in some ex-patients returning to original occupations, some to other suitable occupations, and one or two even returning to the general labour market.

Together with this, as mentioned in Dr. Elphick's report, is the projected development of the Linley Valley scheme, that is, a village settlement for the more chronic sufferers of tuberculosis who are obliged to live within the limitations imposed by the nature of their illness. It is expected that this ambitious project will commence operations during 1951.

The Commonwealth Social Services Department is also playing a valuable part in rehabilitation, more particularly for those patients who have responded to treatment and are regarded as completely stable cases

Fifteen such ex-patients were accepted by this Department for rehabilitation courses during the year.

RECORDS AND STATISTICS.

A new Notification Form has been designed to facilitate the data required for the Basic Card Index, so that a more accurate record will be kept of the exact status of any notified case of tuberculosis from the inception of notification.

The appointment of a second Records Clerk in July of the year enabled the completion of the case register in an up-to-date form.

This should in future allow of more satisfactory follow-up of all cases.

As at 31st December, 1950, there were 2,100 notified cases of pulmonary tuberculosis on the Register.

Five hundred and fifteen of these were in receipt of the Tuberculosis Allowance, comprising :—

Married persons	177
(with 213 dependent children)	
Single persons	338
Australian	432
Migrants	83

NOTIFICATIONS AND DEATHS.

Year.	Notifications.			Deaths.	Death Rate per 100,000.	Ratio of Notifications to Deaths.
	P. Pulmonary.	Non Pulmonary.	Total.			
1945	271	14	285	163	33·2	1·7
1946	343	69	412	170	34·6	2·4
1947	352	40	392	141	28·2	2·8
1948	325	20	353	161	31·3	2·2
1949	*499	20	519	123	22·2	4·86
1950	586	18	604	129	22·3	6·68

* Includes 86 notified from Claremont Mental Hospital as a result of special survey of inmates.

The *number of notifications*, the highest number yet recorded, must again be regarded as simply due to the increased effort in detection of cases ; and not taken as signifying any actual increase in the disease.

The *Death Rate* has maintained the record low reached in 1949, with a figure of 22·3 per 100,000 of the population.

The world-wide downward trend of tuberculosis mortality continues, with the whole of Australia showing a slow steady fall.

The Western Australian rate may be regarded as satisfactory by world standards, a few countries, however, like Denmark showing remarkably low rates achieved by intensive control measures.

A few rates (for 1949) are shown here for comparative purposes. Denmark 16, Holland 18, New Zealand 25, United States of America 26, England and Wales 40, France 56.

There is no need to emphasise here that mortality rates must not be taken as the sole guide, the real task still remaining is the treatment of the victims of the disease.

STAFF.

Medical.—It has not been possible as yet to attain the required number of four permanent medical officers considered necessary for the efficient running of the Perth Chest Clinic and its ancillary activities.

Dr. Heymanson has most satisfactorily filled the position of Tuberculosis Physician, taking over most of the management of the Chest Clinic.

Dr. Grey Edwards was appointed Assistant Tuberculosis Physician as from July and has been a great asset to the Clinic Staff.

Dr. Peter Gibson was appointed Senior Medical Officer to the Clinic in February, while still assisting with surgical duties at the Royal Perth Hospital. His enthusiasm for his work was much appreciated.

He left, however, for post-graduate surgical studies in England in October, expressing a wish at that time that he might return to the Staff of the Tuberculosis Control Branch.

Nursing.—The staff of Visiting Nurses has of necessity been augmented to a total of nine.

This has been due to increased work, mainly in association with Mantoux testing and the B.C.G. campaign.

The Senior Visiting Nurse, Sister Cockerell, has displayed exceptional administrative ability, and has been of great personal assistance to me in the planning of many aspects of our work. She has also undertaken over-all supervisory duties of "Moriston," where Sister Hack has been appointed Sister-in-Charge.

Lay.—Mr. J. Morrison, as Clerk-in-Charge, has shown consistent ability and has been of great assistance in general administration.

Technical.—Mr. J. Park, Senior Radiographer, has ensured a high standard of efficiency amongst his staff, and his help, with that of Miss P. Thomas, was particularly appreciated during the Kimberley survey of Aborigines, when work had to be carried out often under very difficult and trying conditions.

CONCLUSION.

The year has shown further consolidation of the advances made in recent years in tuberculosis control in this State.

The commencement in July of the year of the Tuberculosis Allowance payments under the Commonwealth Tuberculosis Act, 1948, has been a tremendous advance in the social and economic protection of the tuberculosis sufferer.

The case-finding effort is still discovering an increasing number of cases. It is thought that in the future, when the numbers of cases discovered each year begin to diminish, the goal will be in sight of eradication of this disease.

The year has shown maintenance of the decline of the death rate due to tuberculosis, the rate remaining at the previous record low figure reached for 1949.

The results of treatment are very encouraging, showing an increasing number of discharges of controlled and stable cases. This is doing much to dispel the old fear in the public mind about the disease.

Interesting developments and progress are reported in the rehabilitation of the ex-patient.

The following reports of the Tuberculosis Physician, and the Medical Superintendent of Wooroloo Sanatorium, analyse more in detail the work of their respective responsibilities.

ACKNOWLEDGMENTS.

I would like to express to you, sir, my appreciation of your encouragement of the work of this Branch of your Department ; to the Under-Secretary, Mr. H. T. Stitfold, and the Assistant Under-Secretaries, Mr. J. J. Devereux and Mr. H. E. Thurkle, for their similar support ; to the Tuberculosis Physician, Dr. F. E. Heymanson, and the Superintendent of Wooroloo Sanatorium, Dr. H. R. Elphick, for their loyalty and hard work ; and also particularly to the Senior Visiting Nurse, Sister K. Cockerell, of the Chest Clinic and the Matron of the Wooroloo Sanatorium, Matron E. Lockhead, for their zeal and enthusiasm.

ALAN KING, M.B., B.S., B.Sc.
Director, Tuberculosis Control Branch.

APPENDIX III.

REPORT OF THE TUBERCULOSIS PHYSICIAN FOR THE YEAR ENDED 31st DECEMBER, 1950.

The Director of Tuberculosis Control.

I have the honour to submit a report on the activities of the Staff of the Perth Chest Clinic for the year ended 31st December, 1950.

Out-Patient Clinics.

These are conducted three times weekly on Monday, Wednesday and Friday mornings. They are attended by all tuberculosis and suspect patients under our supervision, and also by patients referred from the Royal Perth Hospital, by those with chest abnormalities discovered by mass radiography, and by any patients referred from general practitioners by arrangement.

It will be noticed that there has been a considerable diminution in the number of attendances in the year 1950 as compared to the preceding year. This is due to the fact that previously all patients referred by general practitioners for x-ray of the chest automatically attended as out-patients. Now the only ones who attend are those who are referred back to us by their doctors as the result of the discovery of a chest abnormality.

Total number of attendances	3,903
Average per Clinic	27
Total number of full-size x-rays taken	9,783

This latter figure represents films taken of patients attending Out-Patient Clinics and referred by general practitioners, and also all re-takes following micro x-ray.

Artificial Pneumothorax Clinics.

The two main clinics are conducted on Tuesday and Friday mornings ; extra clinics are held on Thursday mornings and Friday evenings for ex-staff and working patients.

X-ray Screenings	1,991
Refills	1,767
Total number attending Out-Patients Refill Clinic as at 31st December, 1950	76
Bilateral cases	8
Unilateral cases	68

Cases referred by General Practitioners.

The number referred this year is a little less than during the preceding year : however, the percentage of active cases of tuberculosis is higher, being 3.3 per cent.

This figure pointedly demonstrates the great value of facilities being freely available to all doctors for the x-ray of all patients whose symptoms are regarded as suspicious of tuberculosis.

This service has also resulted in the detection of numerous other abnormalities. The figures are as follows :—

Total number	3,699
Normal X-rays	2,973
Total number of abnormalities of all sorts diagnosed....	726
Cases of pulmonary tuberculosis diagnosed and admitted to hospital (includes 1 Tuberculous pneumonia and 1 Tuberculous empyema ex Malaya)	85
Cases of pulmonary tuberculosis diagnosed and under Out-Patient observation	37
Suspect cases undergoing further observation	90

Other Conditions diagnosed by X-ray and Clinical Findings.

Chronic Bronchitis and Emphysema	59
Cardiac abnormalities (including Cardio-Vascular abnormalities)	41
Bronchiectasis (Diagnosis on plain X-ray)	43
Silicosis	37

Pulmonary Fibrosis of unknown etiology	7
Pneumonic Process (non-tuberculous)	164
Spontaneous Pneumothorax	11
Marked bony abnormalities	6
Pleurisy with effusion	9
Pleural Shadowing (recent)	25
Pleural Shadowing and Calcification of Pleura (Sequelae of Pleurisy)	46
Carcinoma of Lung (including Secondary Carcinoma)	14
Other Tumours	5
Bronchial Asthma	9
Lung Abscess	7
Cystic Disease of Lung	11
Aneurysm of Aorta	1
Empyema (old)	4
Sarcoid (unproven)	1
Diaphragmatic Hernia	2
Siderosis	1
Atelectasis (Cause unexplained or requiring further investigation)	5
Goitre (Clinically confirmed)	1
Pulmonary Calcification of unknown origin	1
Broncho-pleural fistula	1
Pulmonary eosinophillia	1
Haemothorax (old)	1
Bronchogenic Cyst	1

MANTOUX TESTING AND B.C.G. INOCULATION.

Child Contacts.

All child contacts, where practicable, have been Mantoux tested, a positive reaction being followed by x-ray.

Total number tested 1,693

This figure includes a few children who had no known contact, the test being performed for diagnostic purposes.

Those who had a negative reaction, and who could be isolated from the known source of infection for six weeks preceding vaccination, and eight weeks subsequently, were given B.C.G.

New-born infants of tuberculous mothers, were vaccinated without preliminary Mantoux testing, provided that the mother agreed to the two months' isolation following vaccination.

Mantoux +ve	Mantoux —ve B.C.G. not given.	Mantoux Result not seen.	Mantoux —ve B.C.G. Given. B.C.G. completed.	B.C.G. given but 2nd Mantoux not done.
291	798	17	433	154

Survey Groups—Adults and Children.

In addition to contacts, a large number of people were Mantoux tested in the course of group surveys. The groups were (briefly) as follows :—

Industry (Welshpool and North Fremantle).
Hospitals (Claremont, staff and patients ; Devonleigh Trainees).
Orphanages.
Schools (Christ Church).
University.

Positive reactors to the Mantoux test, who were over fourteen years of age, had an x-ray of the chest. A large proportion of negative reactors were vaccinated with B.C.G.

Mantoux +ve	Mantoux —ve B.C.G. not given.	Mantoux Result not seen.	Mantoux —ve B.C.G. Given. B.C.G. completed.	B.C.G. given but 2nd Mantoux not done.
550	781	33	529	154

B.C.G. Vaccine.

This has, up to the present, been administered only to selected groups such as are indicated above, and which include groups at risk, *i.e.*, nursing trainees, contacts, etc.

MASS RADIOGRAPHY.

Perth Chest Clinic.

A total of 23,008 Micro films were taken this year ; of these, 12,113 were volunteers. The total is a considerable increase over that for 1949 (15,638).

Survey groups representing 10,895 exposures included the following :—

Services	2,566
State and Commonwealth Public Service Candidates	793
Routine X-rays referred by General Practitioners	1,149
State School Teachers and Kindergarten Teachers	100
Immigrants	489
K.E.M.H. Patients	1,152
Contacts	1,445
Miscellaneous (Banks, Business Institutions)	2,546

Re-takes on large films were 1,214, representing 5.3 per cent. of the total.

Mobile X-Ray Unit.

A total of 9,761 exposures were made, these included 7,388 migrants (displaced persons) and 2,373 survey films.

There were 1,028 re-takes on large films, which is 10.5 per cent. of the total. This percentage is unduly large, but is probably accounted for by the large number of minor abnormalities in the migrant group.

The survey films were taken in conjunction with the Mantoux surveys, only positive reactors being x-rayed. Those x-rayed were employees from North Fremantle and Welshpool Industries and patients and staff from Claremont Mental Hospital.

Mass Radiography Findings.

Total number of 35 mm. exposures		32,769
Cases of Pulmonary Tuberculosis diagnosed (excluding migrants) :		
Admitted to Hospital	48	
Under Out-Patient observation	23	
	Total	71
Suspect cases of pulmonary tuberculosis undergoing further observation		85

The incidence of active disease is, in the present series, 2.8 per 1,000.

Other conditions diagnosed by x-ray and clinical findings.

Silicosis	36
Chronic Bronchitis and Emphysema	22
Cardiac Abnormalities	26
Bronchiectasis (Diagnosis on plain x-ray)	27
Bony Abnormalities	6
Pulmonary Fibrosis of unknown aetiology	2
Empyema (old)	5
Cystic disease of Lung	14
Lung Abscess	1
Carcinoma of Lung	8
Other Tumours	3
Substernal Goitre	1
Pleurisy with Effusion	3
Pleural Shadowing (Recent)	5
Pleural Shadowing and Calcification of Pleura (Sequelae of Pleurisy)	31
Spontaneous Pneumothorax	3
Diaphragmatic Hernia	1
Other Diaphragmatic Abnormalities	4
Pneumonic Process (non-tuberculous)	52
Aneurysm of Aorta	1
Atelectasis (Cause unexplained or requiring further investigation)	7
Bronchial Asthma	1

Migrants (Displaced Persons).

Admissions to Wooroloo of migrants with proven active tuberculosis totalled 37, but of these nine arrived in Australia during 1949. The remaining 28 represents an incidence of 3.8 cases per thousand of active tuberculosis amongst the 7,388 migrants x-rayed during 1950. In addition, a large number are being kept under regular x-ray observation.

ROYAL PERTH HOSPITAL.

Routine Chest X-Rays of New Patients.

This survey continues and, as before, has rendered very valuable service in its yield of tuberculosis and other significant abnormalities.

The total number of cases referred to the Perth Chest Clinic as a result of doubtful or abnormal 5 in. x 4 in. chest x-rays	146
Normal x-rays	18

Cases of Pulmonary Tuberculosis Discovered—

Admitted to Hospital	25
Under Out-Patient Observation	28
Suspect Cases under Observation	50

Other Conditions (non-tuberculous) detected—

Silicosis	9
Lung Cyst	1
Intrathoracic Tumours	1
Emphysema	4
Spontaneous Pneumothorax	1
Pneumonic Process	2
Pleural Shadowing (recent)	1
Pleural Shadowing and Calcification of Pleura (Sequelae of Pleurisy)	5
Bronchietasis	1

In-Patients.

The Director has been good enough to allocate to me six beds in Ward XI., which is much appreciated.

FREMANTLE HOSPITAL CLINIC.

This has been conducted this year, partly by myself, but, in the main, Dr. F. G. B. Edwards has been responsible. It is held once a week on Monday afternoons.

Total attendances	1,472
Average per Clinic	31
Attendances of known cases of tuberculosis	373
Contact x-rays	214
Volunteer x-rays	295
Cases referred by General Practitioners	390
New cases of Tuberculosis discovered	12

Artificial Pneumothorax Clinic :

Number of cases receiving Pneumothorax	12
Total number of refills	262
Average number of refills per Clinic	6

In-Patients.

Our three female beds have been fully utilised, largely for minimal cases undergoing treatment by rest and for convalescent cases from Wooroloo Sanatorium.

VISITING NURSES.

Our staff of nursing sisters has been kept fully occupied. In addition to the home supervision of patients, they continue to discharge their many other obligations with the efficiency which has now come to be expected as routine. These latter duties include supervision of Out-Patient Clinics, Mantoux testing on a large scale, and carrying out the details of routine organisation, which are so important to the smooth running of the Clinic.

Sister Cockerell, the Senior Visiting Nurse, reports :—

Number of patients visited in the metropolitan area	1,221
Number of visits	6,896
Number of patients with positive sputa	153

ACKNOWLEDGMENTS AND CONCLUSIONS.

1. The new arrangements inaugurated at the beginning of 1950, whereby patients referred by General Practitioners do not now attend the Out-Patient Clinic unless specifically required to do so, has eliminated a lot of redundant work and enabled much greater attention to be given to the supervision of those with known or suspected disease.

2. The incidence of tuberculosis amongst cases referred by General Practitioners continues to be high, the figure for this year, 3·3 per cent., being 0·6 per cent. in excess of that for the year before. The value of this service as a case finding technique is self-evident.

3. The proportion of active cases of tuberculosis found in the Mass Survey over the last three years has varied from 0·19 per cent. in 1949 and 0·23 per cent. in 1948 to 0·28 per cent. in 1950.

It is unlikely that these variations are wholly due to genuine differences in incidence in the groups x-rayed each year, even taking into account the inevitable differences in composition. Statistical difficulties in providing these figures are considerable and undoubtedly have played their part in producing the discrepancies.

4. I would like to thank the Director for his continued and friendly encouragement which has stimulated us all to try and make a personal contribution towards the efficiency of this Clinic.

In addition, I would like to express my appreciation of the great assistance I have received from the Assistant Tuberculosis Physician, Dr. F. G. B. Edwards, and I wish to record my thanks to the Nursing and Lay Staff of this Clinic for the willing and conscientious service which has been so freely given at all times.

F. E. HEYMANSON,

Tuberculosis Physician, Tuberculosis Control Branch.

APPENDIX IV.

ANNUAL REPORT FOR WOOROLOO SANATORIUM, 1950.

The Director, Tuberculosis Control Branch,
Perth Chest Clinic,
17, Murray Street, Perth.

I have the honour to present the annual report for Wooroloo Sanitorium for the year ended 31st December, 1950.

During 1950 two outstanding and gratifying facts were observed. The first was a considerable increase in the number of " arrested " cases discharged from the Sanatorium, and the second was the greatly increased number of patients in whom chemotherapy was used, with a considerable degree of success.

Streptomycin was used extensively during 1949, and under its control many successful major surgical procedures were carried out. In 1950 the number of cases subjected to active treatment was not appreciably increased, but in conjunction with para-amino salicylic acid, streptomycin was used much more extensively and many remarkable effects were achieved in cases which would previously have been considered irremediable.

Chemotherapy administered, alone or in conjunction with surgery :—

1948	40
1949	56
1950	145

Details of chemotherapy for 1950 are as follows :—

TABLE 1.

Streptomycin alone (½ *or* 1 *gm. daily*).

Type of Disease in Lung.	Number Treated.	Improvement.	Conditions Unchanged or Worse.	Died.	Sputum Negative.	Sputum Positive.
Minimal—						
Bronchial disease	2	2	....	....	2	....
Pre-operatively	1	1	....	....	1	....
Moderately advanced	13	11	2	....	8	5
Advanced	12	5	3	4	1	4

P.A.S. Alone.

Type of Disease in Lung.	Number Treated.	Improvement.	Condition Unchanged or Worse.	Died.	Sputum Negative.	Sputum Positive.
Minimal	2	2	....	....	2	....
Moderately advanced	7	7	....	....	4	3
Advanced	12	4	5	3	1	8

Streptomycin and P.A.S. Combined Daily.

Type of Disease in Lung.	Number Treated.	Improvement.	Condition Unchanged or Worse.	Died.	Sputum Negative.	Sputum Positive.
Minimal	2	2	....	....	2	....
Moderately advanced	13	13	....	....	13	....
Advanced	16	14	2	....	9	7

Streptomycin and P.A.S. Alternatively (Strep. 4 days per week. P.A.S. 3 days per week).

Type of Disease in Lung.	Number Treated.	Improvement.	Condition Unchanged or Worse.	Died.	Sputum Negative.	Sputum Positive.
Minimal	1	1	....	....	1	....
Moderately Advanced	35	29	6	....	24	11
Advanced	9	3	6	....	2	7

A further factor which considerably augmented the "arrested" rate, was the earlier diagnosis achieved by the X-ray services of the Tuberculosis Control Branch, as evidenced by the number of cases whose arrest was gained by bed rest alone. This factor is indicated in Table II, in which it can be seen that, of the arrested cases, 37 received bed rest alone, in contrast with 14 in 1949 and 10 in 1948. Table II also reflects the effect of the increased amount of surgery carried out during the past two years. In fact, it would appear that the increased number of discharged cases classified as "arrested" is due to these two factors entirely. The effect of increased use of chemotherapy will be evident in the state of cases discharged in 1951, when a futher improvement can be anticipated.

TABLE II.

Cases Discharged during 1950.

Year.	Number of Discharges to own home excluding transfers and absconders.	Deaths.	Hopeless cases discharged to ideal home conditions.		Controlled or stationary cases.				Arrested Cases.				
					Sputum +ve.		Sputum —ve.		Active treatment with chemotherapy when indicated.	Chemo-therapy alone.	Bed Rest alone.	Total.	
			No.	%	No.	%	No.	%				No.	%
1948	143	45	25	17.4	30	21	36	24	42	....	10	52	36
1949	105	39	17	16	11	10.5	26	25	35	2	14	51	49
1950	176	48	15	8.5	36	20	15	8.5	69	4	37	110	62.5

Medical Statistics.

During the year 498 patients received treatment in the Sanatorium. The admissions, discharges and deaths were as follows :—

Admissions	254
Discharges	208
Deaths	48

Of the admissions, a considerable proportion again were recent arrivals in Australia, *viz* :—

Displaced Persons	37
Nominated migrants and holders of landing permits	8
British	16

Details of Treatment.

A summary of active treatment carried out during the years 1948, 1949 and 1950, is as follows :—

Year.	Satisfactory A.P.	Thoracoplasty or Apicolysis.	Resection of Lung or Lobe.	Total.
1948	17	16	10	43
1949	14	40	7	61
1950	17	37	9	63

Details of active treatment during 1950.

Artificial Pneumothorax—

Inductions or attempted inductions	30
Satisfactory A.P. (with or without pneumolysis)	17
Complications (Effusion requiring one or more aspirations)	2
Other complications	*nil*
Thoracoscopies	21
Complete Pneumolysis	11
Refills	1,168

Major Surgery (carried out at Royal Perth Hospital on Sanatorium patients)—

Apicolysis with plombage	37
Revision thoracoplasty	1
Drainage of extra-pleural abscess and removal of leucite balls	4
Pneumonectomies	3
Upper lobectomies	4
Lower lobectomies	2

Minor operations carried out on Sanatorium patients at Wooroloo	14
Phrenic crushes	2
Phrenic evulsions	3
Pleural aspirations	62
Bronchoscopies	40

STAFF.

Major credit is due to the Resident Medical Staff for the way in which they have worked throughout the year. Without their full co-operation the treatment above mentioned would have been impossible, and I am grateful to all members for their loyal support.

The skill of the Thoracic Surgical Team, Mr. F. J. Clark, Surgeon, and Dr. G. R. Troup, Anaesthetist, has been responsible for the excellent results obtained in major surgery, and their continued interest and enthusiasm has been a constant stimulus to the Sanatorium Medical Officers.

During the year we have benefited by the weekly visits of yourself and the Tuberculosis Physicians, Dr. F. E. Heymanson, and all members of the Resident Staff look forward to the discussions which occur on these visits.

Throughout the year, Professor Young, the Director of Medical Laboratories, has been most helpful in problems associated with the Laboratory, and his continued interest and advice is appreciated.

During 1950, Dr. K. Barndon Brown has acted as Hon. Ophthalmologist to the Sanatorium, and his assistance in this regard has been sincerely appreciated by the patients and staff.

Meetings of the Thoracic Consultant Team at the Perth Chest Clinic have been attended by all members of the medical staff throughout the year. The discussions which take place at these meetings regarding all cases for whom surgical treatment is considered advisable, add considerably to the interest of the Medical Officers concerned with their management, and our appreciation is expressed to all members whose attendance makes the meetings so valuable.

Nursing Staff.

Under Matron E. S. Lochhead, the Nursing Staff has continued to work conscientiously, and I am again grateful to all members for their loyal support. The increased amount of chemotherapy, together with a larger turnover of patients, has increased the amount of nursing necessary, and at times during the year staff shortages have been embarrassing. Nevertheless the standard of nursing has been consistently high and for this fact high credit is due to the trained staff, for whose efforts I express praise and appreciation.

Rehabilitation.

During the year approval was granted for the appointment of a full-time Social Worker, and we were fortunate in the appointment of Miss M. Walters, who has had considerable experience and has, since her arrival at Wooroloo, devoted her time fully to the alleviation of social problems affecting patients and their families. As she becomes better known to the patients, it is certain that they will derive even more benefit from her sympathetic interest in their worries, and her ability to help.

Miss Mayer resigned from the position of Occupational Therapist in September, and in October her place was taken by Miss Jocelyn Perry, who has assumed her duties ably, and undertaken the supervision of all aspects of occupational Therapy.

Mr. W. J. Skipworth, the Education and Rehabilitation Officer has continued to arrange for, and supervise, all correspondence courses and, in addition, has carried out a considerable amount of personal tuition in primary subjects such as English and mathematics.

Weekly meetings are now held to discuss the rehabilitation of patients, and are attended by the Medical Staff, the Occupational Therapist, the Social Welfare Officer and the Education Officer. Prior to the discussion on any patient, the Education Officer or Occupational Therapist interviews the patient to obtain details of previous occupations and educational standards, and with this information, the clinical condition of the patient and future possibilities are discussed. Following this conference, the Occupational Therapist and Rehabilitation Officer assist the patient to plan his future as soon after his admission as possible. Subsequently, when he is fit to commence activity, an appropriate course of study is arranged when necessary, and his vocational training is commenced, with the object of equipping him for any necessary change of occupation with the minimum of delay.

Art Therapy, under the guidance of Mr. G. Grey-Smith, again played its part in the diversional therapy of many patients. A number of lithographs, representing the work of modern artists, were framed and are hung in the wards. These are circulated through the institution, one or two remaining on display in each ward for seven to fourteen days, so that gradually a variety of reproductions is seen by all patients. The interest stimulated by the prints, whether approving or critical, has entirely justified their acquisition, and it is hoped that we shall be able to add to them shortly by the purchase of reproductions of some or all of the recent UNESCO art exhibits.

Original artistic contributions were stimulated by an exhibition which was held in the hall in November, and the many exhibits indicated the response with which the Art Therapist's efforts have met.

Miss E. Burgess, the Red Cross Handcraft Worker, completed her term of service in August, and was replaced by Miss B. Spruhan, who has carried out this aspect of the occupational Therapy most capably.

Laboratory.

Miss Bothwell has continued her conscientious service as Senior Technician. During the major part of the year she has been ably assisted by Mr. A. Krievs, a New Australian Medical Officer, whose work has been of a high standard of efficiency.

Lowenstein's Medium, prepared by the laboratory staff, was used exclusively during 1950 for the culture of the Tubercle Bacilli, and some interesting facts were observed regarding its reliability relative to that of guinea pig inoculation. On most occasions when the culture was positive, growth was apparent at the end of three, and in some instances at the end of two weeks, *i.e.*, three to four weeks before the result of guinea pig inoculation would be known. Moreover, in the investigation of 72 cases, specimens of sputum and/or gastric contents were divided into equal amounts, half being inoculated into a guinea pig and half on to culture. Of these 72 cases, 10 were positive on both culture and guinea pig, 60 were negative on both, one produced tuberculosis lesions in the guinea pig with a negative culture, and one was negative on guinea pig inoculation but produced typical growth on culture, and this growth when inoculated into a guinea pig gave rise to widespread tuberculosis lesions.

Work was commenced on cutting histological sections, and an excellent section of microscopic slides is being collected, which in conjunction with microscopic autopsy specimens will contribute to the interest of the X-ray museum.

Details of laboratory examinations are as follows :—

Sputum examinations for T.B.—direct smear	1,043	(55% pos.)
Sputum examinations for T.B.—concentration	251	(14% pos.)
Sputum examinations for T.B.—culture	1,735	(24% pos.)
Gastric contents examined for T.B.—culture	471	(10% pos.)
Pleural fluid examinations for T.B.—		
Direct smear	60	(3% pos.)
Culture	47	(13% pos.)
Urine examinations for T.B.—culture	26	(12% pos.)
Urinary examinations—general	221	
Faeces examinations	21	
Blood Counts	365	
E.S.R.'s	18	
General bacteriological investigations	38	
Smears for lepra bacilli	12	
C.S.F. examinations	41	

X-Ray.

Throughout the major part of the year, Dr. D. Karczub, a displaced Medical Officer, with considerable experience in radiology, has been responsible for the taking and processing of X-rays, and his knowledge of X-ray technique and also of the interpretation of X-ray films is of a high standard. In all, 2,781 X-ray films were processed, and there were 2,750 screenings. The X-ray exposures included 33 sets of tomograms, 40 X-rays of spine and sacrum and other bony regions, and four intravenous pyelograms.

Leprosarium.

During the year the whole of the Leprosarium was renovated and painted with gratifying effects.

The three in-patients have improved considerably as the result of sulphetrone treatment, and in the latter part of the year this treatment has been supplemented by the administration of " Thiacetazone," a thio-semicarbazone provided for trial purposes through the courtesy of Boots Pharmaceuticals, Ltd. The combination of these two drugs would appear to offer patients suffering from Hansen's Disease increased chances of gaining control of their disease.

Administration.

The Secretary, Mr. G. J. G. Stansfield, has been responsible for all aspects of general administration and has maintained his high standard of efficiency through the year, and under him the administrative staff has worked conscientiously and efficiently. I am grateful to them for their continued co-operation on all occasions.

Buildings and Accommodation.

Six cottages were completed just before the end of the year and are a welcome addition to our accommodation for married members of the staff. They form an attractive crescent on the outskirts of the Sanatorium grounds and improve the general appearance of that portion of the Sanatorium on which they are situated. Further work continued on the Medical Officers' houses, but as yet they are not ready for occupation. The Occupational Therapy centre is almost completed and will, it is hoped, be ready for occupation early in the New Year. Work on the quarters for sick staff has been almost at a standstill, and it is hoped that with the completion of the other buildings an acceleration in the rate of progress of this building will be possible, so that a pressing need will be fulfilled with the minimum of further delay. During the year a section of the Top Block, previously occupied by the Colony Tinsmithy and Store, was vacated, and it is hoped that in the near future work will commence on the conversion of this section into quarters for staff, which are still urgently required.

Engineering.

The Engineer, Mr. H. S. Leys, was at all times most efficient and co-operative, and the maintenance staff under him performed good work.

Difficulties with the water supply, partly overcome by the installation of a seven inch main from the main Kalgoorlie water scheme to the overhead tank, were further relieved by general cleaning of the larger pipes throughout the institution and the installation of a direct link between the seven inch main and our own reticulation scheme, with a reducing valve to control the pressure.

Considerable shortage of power resulted from a major breakdown of the large Crossley generating plant which had to be discarded. Two new Southern Cross 40 h.p. plants were installed and have increased our available power to a higher level than previously. With the installation of a third similar plant in the near future, it is anticipated that our problems in this regard will be solved, and it is hoped that the additional power will make it possible to install a considerable amount of electrical equipment in the wards, which until now has been imposible because of the added load on the power supply.

A new freezing plant and brine tank, installed in the main cold storage chamber, have provided improved conditions for storage and greater efficiency of ice manufacture.

In the Carpenters' Shop a new planing machine and band saw have been installed, and have added considerably to the efficiency of that department. During the year the Carpenters completed the erection of the cottage at the State Farm, which was commenced in 1949, under the supervision of the Public Works Department.

Groundstaff.

The Groundstaff have continued to improve the general appearance of the Sanatorium grounds, and also carried out further work on the improvement of the recreation oval. It is hoped that during 1951 this ground will be completed and an attempt made to cover it with a grass surface. The Groundstaff have been responsible for the disposal of general waste from the Sanatorium, which as yet is unsatisfactory, and the early erection of a suitable incinerator is anticipated.

Fly Control.

During the summer months, flies during the day and flying insects at night caused a considerable amount of distress and discomfort to all patients, and attempts have been made during the year to control the breeding of flies and to destroy the flies in and about the wards. As yet our attempts have met with little success, but it is anticipated that with vigorous efforts aimed at the control of breeding, and fogging of the surrounding area, it will be possible to keep the flies under control sufficiently to obviate the necessity of enclosing the institution with fly-wire, which at present appears to be the only solution.

Kitchen.

The Kitchen Staff have continued to work conscientiously under conditions which are far from ideal, but it is still not possible to attain the standard of diet which is desirable in an institution of this nature. As yet our efforts to obtain the services of a full-time Dietitian have been unsuccessful, and conditions in the ward make it impossible to provide the number of special diets which are so frequently required in the treatment of sick cases and those with associated gastro-intestinal disorders. Plans have been made to erect on each block a special diet kitchen and pantry, with adequate facilities for the provision of such diets, and it is certain that with the fulfillment of these plans the position will be satisfactory. Moreover, it is hoped to replace the wood stoves at present in the kitchen with " Aga " cookers, which will make for vastly improved working conditions and undoubtedly greater efficiency in the preparation of food in the kitchen.

Entertainment.

Throughout the year the patients and staff enjoyed a number of entertainments arranged by various concert parties, in addition to pictures held twice weekly in the Recreation Hall. A series of lectures and recitals of " Everyman's Music " was arranged by the Adult Education Board and proved extremely interest- and entertaining. The staff entertained the patients on Christmas Eve with a variety show, which again proved a complete success. Thanks are extended to the various parties and artists who made these entertainments possible, and also to the Red Cross, through whose generosity transport was again made readily available for all visiting artists and concert parties. Grateful appreciation is also extended to the Red Cross for their help in other ways during the year particularly in the provision of the full-time Handcraft worker, who assists with diversional therapy to such a great extent.

Grateful appreciation is also expressed to the Lotteries Commission for the gift of a new concert piano which was greatly appreciated both by the artists and by the audiences during the year.

Linley Valley (Wooroloo Colony).

During this year the amalgamation with the Tuberculosis Association was virtually completed and the Title Deed of the orchard property was handed over to that body. A weatherboard house bordering on the Colony property was purchased and has added to the accommodation available. This also has been vested in the Tuberculosis Association.

During the year it was necessary for the Tin-smithy to close down temporarily, due to ill health of the Manager and Acting Manager, and the premises occupied by the Tin-smithy and Colony Store in the Sanatorium proper were vacated.

Work was commenced on the erection of a Nissen Hut at Linley Valley, which will provide accommodation for the new Tin-Smithy and, in addition, huts are being erected for use as a Secretary's office and showroom and a power house. An order has been placed for a Southern Cross generating machine, and it is hoped that within the first half of 1951 Linley Valley will commence to function as a real village settlement with its own sheltered workshop and administrative staff. The large house, previously occupied by the Orchard Manager, has been vacated and will serve as a hostel for single men, and it is anticipated that accommodation will be available for some ten to twelve workers, in addition to accommodation for married men in the other three cottages. It is further anticipated that work will shortly commence on the erection of a new house to be built in conjunction with the Fremantle Cottage Homes Appeal Board.

Members of the Tuberculosis Association Executive have been most helpful in the planning of the village settlement, and the name " Linley Valley " recommended by one of the members of the Executive, has been adopted in lieu of Wooroloo Colony. This name serves to honour the name of Dr. Linley Henzell, who was responsible for the inception of the Colony and has been largely concerned with its survival and progress up to date, and it is hoped that the efforts of Linley Valley will fulfil the plans which Dr. Henzell originally envisaged.

The Tuberculosis Association has expressed its desire to help patients at the Sanatorium in every possible way, and during the year issued free rail passes to a large number of in-patients, for the use of their visitors. In addition, a promise has been received of the purchase of a number of reproductions of the recent UNESCO Art Exhibition held in Perth, which have been suggested by the Art Therapists as valuable addition to our present gallery of pictures.

Dairy Farm.

The State Farm continued to supply all required milk to the Sanatorium, and again a high quality of milk was supplied. The results of the exhibition of stud stock in the Royal Show were encouraging, and I would express my appreciation of the work of Mr. W. B. Wallace, Farm Manager, who continues to improve his stud and maintains the high quality of milk supplied to the Sanatorium.

Poultry Farm.

Throughout the year the Poultry Farm has continued to supply eggs of a high quality to the Sanatorium and, in addition, has undertaken the care and breeding of guinea pigs for investigational purposes. The Manager, Mr. S. Roberts, is to be commended for his continued enthusiasm and industry.

Conclusion.

In conclusion, I again express my appreciation of the constant loyalty and support of my staff, and particularly Dr. D. D. Letham, throughout the year. In addition, I record appreciation of the help given me at all times by yourself and the Commissioner of Public Health, together with the Under Secretary and Assistant Under Secretaries and all members of the Public Health Department.

H. R. ELPHICK, M.B., B.S.
Medical Superintendent.

ADDENDUM.

Obit. C. J. G. Stansfield and H. S. Leys.

It is with extreme regret that I record the sudden death, as the result of an accident, of Mr. C. J. G. Stansfield, Secretary, and Mr. H. S. Leys, the Engineer, which occurred on the 10th January, 1951.

Mr. Stansfield joined the staff of the Sanatorium as Secretary in October, 1943, and during his term of service carried out his duties most conscientiously. As a result of his constant devotion to duty, and enthusiasm about all aspects of his work, he was held in the highest respect and regard by all who worked with, and under, him. In his sudden and unexpected death, the Sanatorium suffered an extreme loss. On behalf of the staff, I extend deepest sympathy to Mrs. Stansfield in her bereavement.

Mr. H. S. Leys was appointed Engineer in June, 1949, and during his comparatively short term in office displayed a quiet efficiency and methodical system, demanding always a high standard of work, and deploring anything slovenly, which won for him the respect and devotion of all the members of the maintenance staff who worked with him. He was at all times co-operative and obliging, and his untimely death is regretted by all who knew him. He is survived by a wife and two children, and to them I extend, on behalf of the staff, deepest sympathy in their loss.

H. R. ELPHICK,
Medical Superintendent.

APPENDIX V.

WESTERN AUSTRALIA PULMONARY TUBERCULOSIS.

Recorded Notifications and Deaths shown in rates per 100,000 of Population.
Compiled from Official Records.

Year.	Population in 1,000's.	Notifications to Commissioner of Public Health.		Deaths Recorded with Registrar General.	
		Notifications Received.	Rate per 100,000 of Population.	Deaths Recorded.	Rate per 100,000 of Population.
1909	263	190	72·2	188	69·6
1910	271	202	74·3	195	71·06
1911	287	259	90·2	190	64·98
1912	301	429	142·5	220	65·3
1913	313	424	135·4	206	70·0
1914	323	353	109·3	229	75·0
1915	321	336	104·6	233	72·1
1916	313	511	163·2	225	71·5
1917	306	464	151·6	217	70·0
1918	308	432	140·2	245	78·7
1919	320	467	145·9	289	89·6
1920	330	442	133·9	259	77·0
1921	334	424	126·9	277	83·0
1922	341	387	113·4	256	75·0
1923	350	361	103·1	216	62·0
1924	363	381	104·9	228	63·0
1925	373	403	108·0	259	70·0
1926	381	415	108·9	252	67·0
1927	392	409	104·3	231	60·0
1928	407	395	97·0	252	71·0
1929	420	400	95·2	245	60·0
1930	429	569	132·6	218	52·0
1931	432	372	86·1	223	53·0
1932	435	339	77·9	203	48·0
1933	439	295	67·2	207	47·0
1934	442	287	64·9	218	49·0
1935	447	270	60·4	210	47·0
1936	452	338	74·8	193	43·0
1937	457	239	52·3	172	38·0
1938	464	247	53·2	178	39·0
1939	470	202	43·0	179	38·0
1940	473	231	48·8	181	39·0
1941	474	154	32·5	185	39·0
1942	477	113	23·7	175	37·0
1943	477	273	57·2	144	30·0
1944	482	219	45·4	134	28·0
1945	488	271	55·5	149	31·0
1946	492	343	79·4	163	33·0
1947	503	372	73·9	128	25·0
1948	515	325	63·1	157	30·0
1949	533	499	93·6	123	22·2
1950	558	586	105·3	125	25·0

APPENDIX VI.

PULMONARY TUBERCULOSIS — WESTERN AUSTRALIA, 1950.

Showing Month of Notification in Sexes and Age Groups.

Month of Year.	1–2 Years.		2–3 Years.		3–4 Years.		4–5 Years.		5–6 Years.		6–7 Years.		7–8 Years.		8–9 Years.		9–10 Years.		10–11 Years.		11–12 Years.		12–13 Years.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
January	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
February	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
March	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....
April	1	1	2	....	....	1	1	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....
May	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
June	....	1	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
July	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....
August	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
September	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
October	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
November	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
December	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Down Totals	1	4	3	....	....	1	1	1	1	....	2	....	....	1	....	....	....	1	....	....	....	....	....	....

Month of Year.	13–14 Years.		14–15 Years.		15–19 Years.		20–24 Years.		25–29 Years.		30–34 Years.		35–39 Years.		40–44 Years.		45–49 Years.		50 Years and Over.		Total Males.	Total Females.	Grand Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
January	....	....	....	....	....	....	1	2	2	1	1	2	2	2	3	5	3	3	23	5	35	20	55
February	....	....	....	....	....	....	1	1	3	6	1	1	2	2	4	2	1	3	12	12	24	27	51
March	....	....	....	....	1	....	4	1	3	2	4	3	1	2	3	3	6	1	21	4	43	17	60
April	....	1	....	....	....	....	....	2	3	....	....	1	2	3	3	1	2	....	10	4	25	15	40
May	....	....	....	....	....	3	3	....	3	4	1	2	1	3	2	2	6	2	17	8	33	24	57
June	....	....	....	....	1	1	5	2	3	2	....	2	2	2	5	....	3	....	14	3	35	13	48
July	....	....	....	....	1	....	1	3	1	1	5	2	5	1	3	1	6	....	21	2	44	10	54
August	....	....	....	....	....	2	1	1	3	3	3	3	6	3	2	....	2	1	12	6	29	20	49
September	....	....	....	....	....	1	3	2	3	4	2	1	2	....	3	1	5	1	17	3	35	13	48
October	....	....	....	1	1	2	....	1	3	1	2	4	2	1	....	1	4	1	14	2	26	14	40
November	....	....	....	....	....	....	....	2	....	6	3	5	3	4	4	....	5	....	10	4	25	22	47
December	....	....	....	....	2	....	1	1	4	3	3	....	3	1	5	2	3	1	6	1	27	10	37
Down Totals	....	1	....	1	6	9	20	18	31	33	25	26	31	24	37	18	46	13	177	54	381	205	586

APPENDIX VII.

STILLBIRTH INQUIRY — 1950.

By Dr. D. J. R. Snow, Medical Officer, Department of Public Health.

The investigation into the causes of stillbirth, neo-natal death, and premature birth was pursued during the year under review and the first substantial series of cases has been analysed. The initial conclusions suggest that the causes of stillbirth in Western Australia appear to conform to an already well-known pattern :—

(1) A group associated with, or attributable to, pre-natal factors such as toxaemia of pregnancy, breech presentations, ante-partum haemorrhage, and rhesus incompatibility.

(2) A group associated with special obstetrical difficulties such as occipito posterior positions, breech presentation, multiple pregnancy and ante-partum haemorrhage.

(3) A relatively large undetermined group of causes resulting in pre-natal death, premature birth, and unexplained stillbirth.

(4) Post-mortem examination has proved of value in revealing the cause of stillbirth and neo-natal death in Western Australia.

The details are as follows :—

A total of 457 consecutive notifications of stillbirths, neo-natal deaths, and premature births have been recorded at the Department of Public Health over a period of 17 months, *i.e.*, 1st August, 1949 (when autopsies in Perth became compulsory) to 31st December, 1950.

Of this number 29 have been omitted from the analysis either because the data provided was inadequate or because the foetus was under 2 lb. 12 oz. in weight and therefore "pre-viable."

Of the remaining 428 cases, 250 were brought to autopsy.

The series of 428 comprises :—

304 Stillbirths .... } including prematures.
94 Neo-natal deaths .... }
30 Premature infants who survived.

It is emphasised that while stillbirths and premature births are notifiable by State Law and subject to special enquiry, neo-natal deaths are not. Figures for the latter must therefore be incomplete.

Stillbirths.

Of the 304 stillbirths (which included 181 autopsies) the probable causes were :—

Asphyxia	93 (30.5%)
Injury	53 (17.4%)
Malformation	22 (7.2%)
Prematurity	10 (3.2%)
Toxaemia	22 (7.2%)
Rhesus Incompatibility	18 (5.9%)
Other Miscellaneous Causes	9 (2.9%)
Undetermined	77 (25.3%)

Neo-Natal Deaths.

Of the 94 neo-natal deaths (which included 69 autopsies) the probable causes were :—

Asphyxia	15 (15.9%)
Injury	15 (15.0%)
Malformation	7 (7.4%)
Prematurity	16 (17.0%)
Toxaemia	1 (1.0%)
Rhesus Incompatibility	10 (10.6%)
Infection	9 (9.5%)
Other Miscellaneous Causes	5 (5.3%)
Undetermined	16 (17.0%)

Premature Births.

The factors associated with prematurity in the 30 premature infants who survived were :—

Multiple Pregnancy	8	53.3%
Maternal Toxaemia	5	
Placenta Praevia	2	
Rhesus Incompatibility	1	
Unknown/Uncertain	14	(46.6%)

Obstetrical Difficulties.

The various obstetrical difficulties recorded were as follows :—

Malpresentation	92
Multiple Birth	27
Cord Complications	36
Ante-partum Haemorrhage	52
Maternal Toxaemia	60
Rhesus Negative Mothers	53

Types of Injury.

The following specific cranial and intra-cranial injuries sufficient to cause death were revealed at autopsy :—

Tear of tentorium cerebelli	25
Tear of falx cerebri	5
Sub-dural haemorrhage	5
Sub-arachnoid haemorrhage	5
Intra-ventricular haemorrhage	6
Rupture great cerebral vein	2
Depressed fracture parietal bone	2
" Intra-cranial haemorrhage " (Unspecified)	6
Craniotomy	1
Total	57

Prematurity.

Out of the 398 stillbirths and neo-natal deaths, 129 (or 32.4 per cent.) were premature infants. The apparent causes of prematurity were as follows :—

Ante-partum haemorrhage	22
Toxaemia of pregnancy	12
A.P.H. and Toxaemia of Pregnancy	5
Multiple pregnancy	12
Rhesus incompatibility	9
Foetal malformation	13
Maternal diseases other than toxaemia	1
Unknown	55 (42.6%)

Of these 129, 82 were stillbirths (including 17 examples of pre-natal death) and 47 were neo-natal deaths.

The respective birth weights were :—

Under 3 lb.	19
3–4 lb.	44
4–5 lb.	31
5–5½ lb.	17
Not stated	18

Blood Examination.

The results of examination of maternal blood in those cases where specimens were provided are tabulated as follows :—

Rhesus Typing.

Rh negative	53 (25.5%)
Rh positive	155 (74.5%)

Blood Groupings.

AB	1 (0.8%)
A	52 (45.2%)
B	9 (7.8%)
C	53 (46.1%)

Wassermann Reaction.

W.R. negative	179 (96.7%)
W.R. Positive	6 (3.3%)

—	Autopsy.							No Autopsy.						
	Stillbirths.			Neo-Natal Deaths.				Stillbirths.			Neo-Natal Deaths.			
	Prem.	Mat.	Total.	Prem.	Mat.	Total.		Prem.	Mat.	Total.	Prem.	Mat.	Total.	
Asphyxia—														
1949	4	7	11	1	2	3		....	8	8	....	....	....	
1950	8	41	49	6	3	9	72	10	15	25	3	....	3	36
Injury—														
1949	3	14	17	1	1	2		....	3	3	....	....	....	
1950	2	25	27	2	9	11	57	....	6	6	1	1	2	11
Malformation—														
1949	1	4	5	....	1	1		1	3	4	....	....	....	
1950	6	3	9	1	4	5	20	2	2	4	....	1	1	9
Premature—														
1949	1	....	1	1	....	1		....	....	....	4	....	4	
1950	4	....	4	5	....	5	11	5	....	5	6	....	6	15
Toxaemia—														
1949	1	3	4	....	....	....		1	1	2	....	....	....	
1950	2	3	5	....	....	....	9	5	6	11	1	....	1	14
Rhesus Incompatibility—														
1949	1	3	4	....	....	....		....	2	2	....	....	....	
1950	4	7	11	....	10	10	25	....	1	1	....	....	....	3
Others—														
1949	....	1	1	1	1	2		1	....	1	....	....	....	
1950	2	3	5	1	10	11	19	....	2	2	1	....	1	4
Unknown—														
1949	2	8	10	....	....	....		2	14	16	1	1	2	
1950	9	9	18	1	8	9	37	8	25	33	4	1	5	56
Total—														
1949	13	40	53	4	5	9		5	31	36	5	1	6	
1950	37	91	128	16	44	60	250	30	57	87	16	3	19	148
	50	131	181	20	49	69		35	88	123	21	4	25	

Note.—Thus where autopsy was performed, the cause of death remained unknown in only 14 per cent. (37 out of 250), whereas in those cases not brought to autopsy, the cause was obscure in 37 per cent. (56 out of 148).

APPENDIX VIII.

STILLBIRTH AND INFANT MORTALITY RATES.

Year.	Total Births including Stillbirths.	Stillbirth Rates	Neo-natal Rates.		Total Mortality Rates under 1 Year.	Other Post Natal Rates Over 1 month and under 1 Year.
			Under 1 Week.	Under 1 Month.		
1926	8,534	27·4	....	27·6	48·0	20·4
1927	8,708	26·0	....	23·0	44·7	21·7
1928	8,981	30·9	....	23·1	35·5	12·4
1929	9,316	28·4	18·8	25·8	54·6	28·8
1930	9,456	27·0	18·0	23·5	46·5	23·0
1931	8,777	26·0	20·1	26·6	40·5	13·9
1932	8,175	25·7	21·02	25·2	43·5	18·3
1933	8,105	29·4	18·1	22·5	35·8	13·3
1934	8,029	29·2	19·3	24·8	38·8	14·0
1935	8,377	30·8	20·6	24·8	39·0	14·2
1936	8,730	28·9	19·6	24·8	41·0	16·2
1937	8,850	27·2	16·8	21·2	36·5	15·3
1938	9,325	23·9	16·6	19·1	33·1	14·0
1939	9,249	23·0	16·5	19·7	40·0	20·3
1940	9,363	25·9	20·5	24·9	43·0	18·1
1941	10,375	24·8	15·1	18·1	34·4	15·7
1942	10,109	20·6	17·1	20·3	36·2	15·9
1943	10,759	25·8	17·1	21·0	31·8	10·8
1944	11,144	24·8	18·6	21·0	32·0	11·0
1945	10,896	20·6	18·0	20·0	28·9	8·9
1946	12,398	23·6	17·1	20·6	30·3	9·6
1947	13,178	23·0	16·9	19·4	30·2	13·2
1948	13,197	20·1	16·9	18·7	25·0	8·4
1949	13,779	19·4	16·2	19·0	25·9	6·8
1950	14,468	16·6	16·2	18·0	26·7	8·6

In above table all rated are calculated in deaths per 1,000 of total births, including stillbirths.

APPENDIX IX.

HOSPITAL BED REQUIREMENTS.

Report by Dr. W. S. Davidson, Deputy Commissioner of Public Health.

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PART I.

HOSPITAL BED REQUIREMENTS.

Introduction.

Because of wartime restrictions and post-war shortages there is a considerable deficit in available hospital accommodation. The huge demands on the building industry to close the gap in the universal housing shortage precludes an easy and early remedy to the hospital shortage.

It is therefore incumbent on us to use our hospitals with maximum efficiency and to distribute new construction in a manner that obtains the maximum benefit.

In a country of nearly a million square miles of varied territory in which three-fifths of the population of only half a million are concentrated in one city area, our problems of beds per population and their distribution may be considerably different from that of a more densely populated state with an even distribution of population.

The object of the present investigation is to obtain the following information to guide our hospital building programme.

Object 1.—To obtain, on the basis of population, our requirement of beds in the State for the following categories :—

(a) General and Convalescent.
(b) Chronic.
(c) Institution.
(d) Mental.

and so compare our requirements with the announced policies of other countries.

Object 2.—To discover how these beds should be distributed in the various areas, *i.e.*, Metropolitan, Regional and Rural.

Object 3.—To display this requirement in two stages.

(a) The desired objective for our programme.
(b) The critical point in hospital accommodation deficit below which a major breakdown in hospital services could be anticipated.

Object 4.—To show by figures and graphically the present position of each hospital area as regards 3 (a) and 3 (b).

Object 5.—To plan an organised grouping of hospitals on the conventional—
Rural———→Regional———→Base Hospital Scheme.

Object 6.—To give an indication of diseases for which Chronic accommodation is required and the distribution for sex and age.

METHOD.

Requirement of hospital beds was estimated from the use made of beds throughout the State in the year 1949.

Each hospital was examined and the number of beds it required was obtained by the division of the number of bed days spent in hospital by 365.

This figure was adjusted by an Efficiency Factor produced for each hospital to give the number of beds efficiently used.

A further adjustment of 10 per cent. was allowed because of wastage in the turnover of beds.

To this number was added an estimated number of beds to remove Waiting List cases.

A further addition was made by obtaining from Medical Practitioners the number of cases requiring admission who were not in hospital or institution and were not on a waiting list examined.

On a given day a census was taken of the inhabitants of all known quasi hospitals or institutions registered as boarding houses and the numbers of chronics and institution cases found therein added to the beds required figure. These boarding houses are always full and maintain a fairly constant figure of beds occupied by chronics, etc. This figure was therefore added to the total without further adjustment for efficiency.

The sum total of the above represents the hospital or institute beds used at 100 per cent. efficiency and that figure is taken as the critical requirement figure, and indicates the figure below which a patient genuinely requiring hospital care may be unable to obtain admission even though the hospitals are run at 100 per cent. efficiency.

To obtain the desired hospital requirement figure the critical requirement figure is multiplied by 100 over the mean hospital efficiency percentage figure.

This should give us the number of beds required to accommodate all patients with the hospitals working at average efficiency.

DETAILS OF METHOD.

Efficiency Factor.

As efficiency must vary for various reasons between hospitals of different types each hospital was considered in its own group and the standard of efficiency was set by the hospitals in that group. An attempt was therefore made to eliminate outside factors and resolve the efficiency factor to one solely dependent on nursing and medical care.

This efficiency factor is a combination of two factors, namely the length of time spent by the patient in hospital and the type of patient admitted to hospital, *i.e.*, excessive time required to treat a patient and admission of patients that could well be treated as out-patients or at home were indications of inefficiency as far as bed estimates are concerned.

To obtain the first part of the factor eight diseases were investigated in each hospital and the average length of stay for each disease worked out.

Then, from all the hospitals in the group the lowest average for each disease was taken and a composite hospital thus formed of maximum efficiency. The total of the averages for each hospital was then used against the total of this composite hospital to give a fraction indicating efficiency.

Two hospitals, each with over 1,300 admissions in the year, were then examined case by case to estimate in what proportion of the whole, brevity of stay in hospital would indicate efficiency.

Such diseases as Cardiac conditions, Hyperthyroidism, Rheumatic Fever, Nephritis, etc., were eliminated as it was considered in them, brevity of stay in hospital had no bearing on efficiency.

It was found then that brevity of stay indicated efficiency in 80 per cent. of the bed-days involved in the two hospitals examined and this was taken as a standard.

Selection of the test diseases taken from this 80 per cent. was made from those which would occur with the greatest uniformity in all hospitals and which would have a diagnosis universally and easily recognised.

For country hospitals the following diseases were selected :—Pneumonia, Enteritis, Tonsillitis, Influenza (including all upper respiratory tract infections other than tonsillitis), Curretage, Herniorrhaphy, Appendicectomy, and adult Tonsillectomy. (Appendix 1a.)

For Base hospitals they were Varicose Ulcers, Pneumonia, Pyelitis, Cholecystitis, Cholecystectomy, Prostatectomy, Partial Gastrectomy, Fothergill Op. (Appendix 1b.)

For Childrens Hospitals they were Pneumonia, Enteritis, Tonsillitis, Influenza (U.R.T.I.) Harelip Op., Appendicectomy, Herniorrhaphy, Tonsillectomy. (Appendix 1c.)

To find that part of the factor dealing with unnecessary admissions, Tonsillitis and Influenza (including U.R.T.I.) were taken as a criterion and their percentage admissions against the total admissions to each hospital recorded. The hospital with the lowest or second lowest percentage was taken as the standard. The second best was occasionally taken to avoid unfair loading and to avoid as far as possible taking an error in compilation by hospital secretaries as a standard.

This maximum efficiency percentage was then subtracted from each hospital's percentage figure and the result subjected to a further calculation as follows :—

It was necessary to turn this efficiency in cases into an inefficiency in bed-days as all working is being carried out in bed-days, not cases. (Bed-days are number of beds x number of days occupied). This was done by finding the average length of stay of all cases in all six hospitals of Group 2 (Two/Three Doctor Hospitals) and the average length of stay of Tonsillitis and Influenza patients.. The result was 9.2 and 6.4. It was therefore considered that 3 per cent. inefficiency in T.I. admissions was equivalent to 2 per cent. total inefficiency.

To check this supposition two similar hospitals each of 1,337 admissions in the year were examined. Though similar in other respects they were widely dissimilar in the proportion of T.I. admissions to other diseases and therefore should have shown a large diversion from the 3 to 2 ratio.

They were examined case by case and unnecessary admissions counted in bed-days. Unnecessary admissions in addition to TI were minor infections, minor injuries and minor operations and investigations. One of the hospitals was in an industrial town and showed a large proportion of these minor ailments to TI. The other hospital in a pastoral town showed a very low proportion. The latter, however, was 2 per cent. less efficient than the former.

The difference in their TI percentages was 3.5. The proportion in this rather extreme case was therefore 3.5 to 2 ; very little different to our previous calculation. The standard of 3.5 to 2 was therefore taken as it gave less loading. That means that for every 1 per cent. of inefficient TI admission shown, .57 per cent. of total inefficiency was recorded. The formula in the second last column of Table 1 is the representation of the two parts of the factor and their multiple is the Efficiency Factor.

For example take the section in Table 1 portraying the one-doctor hospitals. The best composite hospital has the following average number of days length of stay in hospital for the test diseases.

Pneumonia	5.46
Enteritis	2.83
Tonsillitis	2.57
Influenza	4
Curettage	4
Herniorrhaphy	11
Appendicectomy	9.38
Adult Tonsillectomy	5.83
Total of Averages	45.07

Similarly Harvey, the first hospital shown in the group has a total of averages of 60.93.

Harvey's efficiency can therefore be indicated by the fraction 45/61. But this as is shown above applies to only 80 per cent. of the total use of beds, therefore to show percentage of efficiency the fraction 45/61 is multiplied by 80 and the remaining 20 per cent. of bed usage is added on unaltered as 100 per cent. efficiency for that part of the factor.

The second hospital on the list is Big Bell and it will be seen that here the numerator of the efficiency fraction is not the total of averages of the best composite hospital, *i.e.*, 45, but is only shown as 28. The reason being that Big Bell had a nil return for Herniorrhaphy and Adult Tonsillectomy so their averages 11 and 5.83 had to be subtracted from the 45 to correspond to their absence from the denominator. This obviates any advantage being obtained by hospitals which do not attempt to treat all the test diseases.

The second half of the efficiency factor is derived as follows :—In the column I + T is shown the percentage of total admissions that were tonsillitis and influenza. The second best figures, that for Beverley, was taken for the composite hospital. It is 2.8 and column T showing 1 case and Column I 6 cases, a total of 7 out of 246 total admissions or 2.8 per cent.

This 2.8 per cent. of T and I admissions is then considered permissible and is reckoned as 100 per cent. efficient for this part of the factor. Anything over 2.8 per cent. shows a degree of inefficiency to the extent of .57 per cent. total inefficiency for every 1 per cent. of inefficiency in admission of Tonsillitis and Influenza. Thus Harvey has for I. and T. 7.9 per cent. admission rate. Subtract the permissible 2.8 per cent. leaving 5.1 per cent. Multiply this by .57 to give 2.9 per cent. Therefore Harvey's efficiency in admissions is 2.9 per cent. short of our composite hospital and the factor we obtained for Harvey's efficiency for length of time beds was occupied for specific diseases must be reduced further by 97.1/100. Thus the final efficiency factor for Harvey is as is shown in the last column (45/61 × 80 + 20) (97.1/100) = 77 per cent.

Ten per cent. Wastage in Turnover.

The process of discharging a patient and re-admitting another to take his place involves a certain amount of wastage in the use of beds.

To discover what the minimum of wastage in this direction could be a hospital with a permanent waiting list was selected. In this hospital there is an adequate staff of Resident Medical Officers and Registrars who make every endeavour to make full use of their beds. All special beds, that is those set aside for special purposes such as infectious diseases or for sick staff or emergency, were disregarded and the amount of use obtained from the others in regard to occupancy was estimated. It was found that the process of discharge and admission even under these circumstances amounted to a wastage of 10 per cent. This was then accepted as the irreducible amount of wastage in turnover to be expected in an efficient hospital.

This 10 per cent. wastage applies only to hospitals dealing with acute diseases. In calculating chronics, institution and mental cases the turnover wastage factor has been ignored as the slow rate of turnover should lead to little wastage in an efficient institution.

Waiting Lists.

Estimation of beds required to eliminate waiting lists.

This is calculated from the annual increase in the waiting list as it is not a stationary waiting list that denotes present shortage of beds. A stationary waiting list merely indicates that at some time or other there was a shortage and there are no beds available to overtake the shortage, but if such a waiting list should be removed it would not reappear under normal circumstances. An increasing waiting list on the other hand indicates an existing shortage of beds in direct proportion to the rate of increase of the waiting list.

Each case on the waiting list may be taken to require hospital treatment for the average length of stay of all cases that are in hospital. If we then multiply the annual increase to waiting list by average duration in hospital we will get the number of bed-days the increase in waiting list represents and if this is divided by 365 we get the number of beds required. We have, however, to make an adjustment for the 10 per cent. wastage in turnover. If we divide the result by the number of thousands in the population under examination we obtain the beds per 1,000 population required to cope with our waiting lists.

It may be shown in formula as follows :—

$$\frac{I \times D}{365} \times \frac{100}{90} \times \frac{1000}{P}$$

= beds per 1,000 population required to prevent increase in Waiting Lists.

Where I = Annual increase in waiting list in cases.
D = Average number of days cases stay in hospitals under examination.
P = Population.

It was impossible to obtain an accurate figure for an overall increase in waiting lists for metropolitan hospitals as a large proportion of these are private hospitals who do not maintain waiting lists themselves but rely on individual doctors keeping their own lists.

In the Royal Perth Hospital, however, the annual increase is 400 in a 500-bed hospital and this was taken as a standard for the remainder thus giving a substantial safety margin as no hospital is likely to have such a mounting list.

At the same rate then the 1,506 acute beds in the metropolitan area would show a waiting list of an annual increase of $\frac{4}{5} \times 1{,}506 = 1{,}205$ and substituting this in our formula and 14 for average stay (Royal Perth Hospital) we get :—

$$\frac{1205 \times 14}{365} \times \frac{100}{90} \times \frac{1000}{324900}$$

= .16 per 1,000 population.

To Estimate Chronic, Institution and Mental Bed Requirements.

1. Obtain number of beds in :—
   (a) Chronic Hospitals.
   (b) General Hospital.
   (c) Convalescent Hospitals.
   (d) Boarding Houses run as Convalescent Hospitals occupied by Chronics, Institutional or Mental cases at a given time.

2. Assume that this is their normal complement of chronics.

This will be true in (a), (c), (d) because these establishments are always full.

In (b) there will be a variation but taken over the whole State the number at any one time will be fairly constant.

3. Determine the waiting list for such institution. This is impossible to estimate by summing up the waiting lists of the various institutions as in the majority of cases each patient will be on the list of several.

It is therefore necessary to obtain from General Medical Practitioners a list of such patients in their practices.

This was done by taking a selected sample of representative practices.

It is difficult to establish the number of beds required for this waiting list. It is in no way comparable to a General Hospital waiting list, as an average length of stay in hospital cannot be arrived at, nor are figures easily obtained of the rate of increase of this waiting list.

General Medical Practitioners have, however, given the approximate number of days in any one year the patient will require a hospital bed. It is assumed that on the whole similar figures would be given at any one time for the State. Therefore, if a patient is shown to require a bed for 365 days it is assumed that he will occupy the bed for the year and the possibility of his death before that time is ignored as it is assumed that at that time a survey would show his place to be filled by another in the same category.

Where a patient is shown to require a bed for a fraction of a year that fraction of a bed is awarded for him, it being assumed that such case can be adjusted on the waiting list to take their turn of the bed for their corresponding fraction of the year.

4. Add the beds in 1 to the beds and fractions of beds in 3 to find number of beds required.

The information was obtained by circulating a form (*see* Appendix IIa) to all hospitals, institutions, etc., and by a personal check of all boarding houses known to specialise in the care of aged and chronic sick.

Another similar circular was passed to 40 doctor groups (20 metropolitan and 20 regional or rural) Appendix IIb.

The hospital circular confined itself to an examination of patients who had been eight weeks or more in hospital. The doctors' circular concerned itself with chronics, etc., who had been unable to obtain accommodation in hospital or institution. Otherwise the information required by both circulars was more or less the same consisting of age, bedfast or ambulatory, continent or incontinent, Medical and Nursing requirement and Mental category.

From the reports on these circulars each case was considered on its merits and a decision made a category, *i.e.*, General Hospital case, Chronic Hospital case, Institution or Mental case. As a principle, no case was allotted Institutional care unless he was abulatory as it was considered that Institutions for the aged should approach in their form and function that of a hotel or club rather than that of a Workhouse Infirmary.

Of the 1,860 patients in Metropolitan General and Convalescent Hospitals, 1,811 were thus examined and reported on if they had completed eight weeks in hospital. Eight hundred occupants of Chronic Hospitals and Institutions for aged were similarly reported on and 289 patients or inmates of various Homes licensed as Boarding Houses. A consolidated report on 1,596 patients in Mental Hospitals was also obtained from the Inspector General of Insane.

In Regional Areas 403 patients out of 491 were examined and reported on when applicable and in Rural areas 346 out of 575.

Of the 40 doctor groups circularised replies were received from 22 (11 Metropolitan and three Regional and eight Rural) representing medical cover for a population of 85,750 out of the States total population of approximately 500,000.

An examination of the doctors' returns showed the following to be in need of chronic hospital or Institutional care and were unable to obtain it. Figures are per 1,000 of population.

	Chronic.	Inst.
Metropolitan	.97	.65
Regional	.63	.26
Rural	.27	.44

Cases requiring Mental Hospital care were grouped as a whole as no mental hospital accommodation exists outside the Metropolitan Area.

It was found that .16 per 1,000 of the population required Mental Hospital accommodation and were unable to obtain it. These .16 per 1,000 were living at home and the figure does not include those in hospital, Institution and Boarding Houses.

Of the 1,811 patients examined in the Metropolitan Area in General and Convalescent Hospitals, two hundred and sixty-three were in the Repatriation Hospital of which 25 (9.3 per cent.) were chronics or cases other than General Hospital cases. One hundred and four were in Convalescent Hospitals of which 43 (41 per cent.) were chronics, etc.

One thousand four hundred and forty were in General Hospitals, Private and Public and included 119 (eight per cent.) chronics, etc.

The final breakdown of all cases in Metropolitan hospitals (excluding Mental), Institution, etc., was (*see* Table 2) :—

Chronic cases	630
Institution cases	456
Mental cases	140

In a population of 324,000 (Metropolitan) this represents bed requirements per 1,000 population :—

Chronic	1.94
Institution	1.4

Add to this the requirements for cases for whom beds were not available as indicated by General Practitioners and the total requirements are :—

Chronic .... 1.94 + .97 = 2.9
Institution .... 1.4 + .65 = 2.05

Of the 403 cases examined in the Regional Hospitals 49 (12 per cent.) were chronics and in the 346 cases in Rural Hospitals 25 (7.2 per cent.) were chronics. The proportion of Institute and Mental patients included in these chronics was so small as to be negligible.

For Regional Areas the bed requirements for general cases including these chronics will later be shown to be 7.25 per 1,000 population. Therefore 12 per cent. would be .87 per 1,000.

To this must be added .63 per 1,000 representing those indicated by General Practitioners for whom no bed was available and a further addition should be made in Regional Areas to accommodate chronics from Rural Areas as indicated by General Practitioners as it is impracticable to nurse them in small country hospitals.

On an average the Regional town has a surrounding rural population of approximately twice its own and this is taken as a standard. We therefore take the Rural requirements for chronics per 1,000 population and multiply by two when applying them as a requirement in the Regional town and as calculated from the population in that town.

Kalgoorlie of necessity is a complete exception to this rule and here the Rural requirement should be halved rather than doubled.

The Rural requirement for beds acute and chronic will be shown to be 4.8 per 1,000 population. The seven per cent. chronics will therefore be .34 per 1,000 population. To this is added .27 per 1,000 as indicated by General Practitioners as unable to gain admission, making a total of .61 per 1,000 population.

The Regional Requirement for Chronic accommodation is therefore :—

Those in Regional Hospitals	.87	per 1,000
In Regional Towns (not admitted)	.63	
Surrounding Rural Area .61 x 2	1.22	
	2.72	per 1,000

For Kalgoorlie it will be—	
	.87
	.63
	.3
	1.80

Institution Requirements in Regional Areas are as indicated by General Practitioners, *i.e.* :—

Regional Town	.26	per 1,000
Surrounding Rural Area .44 x 2	.88	
	1.14	per 1,000

Kalgoorlie Institute beds will be .26 per 1,000 + ½ Rural requirements or .22 per 1,000.
Total : .48 per 1,000.

Acute Bed Requirements.

These are estimated in the various groups by adding the number of bed days used in all the hospitals in the group, dividing by 365 to reduce the number to beds and dividing the beds by the number of thousands in the total population served by the group. From that is subtracted the number of chronics already estimated to be in these hospitals and the remainder is the " Desired Level " required for these hospitals or the number of beds per 1,000 population they would require working at average efficiency. The efficient bed days are then totalled for the group and the fraction of this over the actual bed days x 100 is the average efficiency for the group. If we then find this percentage of the Desired Level beds, we have the Critical Level or the number of beds required when the hospital is working at 100 per cent. Efficiency.

This working is shown in Tables 3D, 3E, 3F for each of the groups.

The Metropolitan figures were worked out slightly differently owing to the complex nature of some hospitals and institutions. Here the efficient use of beds was worked for each hospital, the total giving the critical level and by multiplying by 100 over 85, the Desired Level was obtained (the average efficiency for the group being 85 per cent). This is shown in Table 3A.

Table 3 gives the present position for each hospital as compared with its Desired and Critical Level for 1950 and for 1960 wherein the population has been estimated to increase 40 per cent. This increase of 40 per cent. takes into account the migration programme and has been estimated by the Government Statistician. The Desired and Critical Levels are shown diagramatically in accompanying histograms.

Bed Requirements for various types of hospitals can therefore be summarised as shown in Table 4. When the weights of the various populations are taken into account the overall requirements for the State are shown in Table 4 with comparisions made with U.K., U.S.A. and N.S.W.

Table 5 gives the number of bed days spent in six hospitals by age groups and indicates that nearly 20 per cent. of beds are required for children 14 years and under in hospitals catering for acute and chronic cases.

Mental Beds.

In Regional and Rural Hospitals the figure is so small that it can safely be ignored while working in beds required per 1,000 population.

In Metropolitan Hospitals, Institutions, etc., the Mental cases are as given in Table 2 indicating that with the addition of these shown by General Practitioners our requirements are 3.63 per 1,000 population.

Table 4 shows how that compares with U.K. and U.S.A.

Table 3B shows our present deficiency of 615 beds and the expected deficiency in 1960.

Comparative Bed Position throughout the State.

Having obtained a yardstick to measure our requirements and having shown the position of every hospital, it is now necessary to ascertain the relative positions of the various classes of hospitals as regards shortages.

Table 6 clearly indicates that broadly speaking the deficiency is in the Metropolitan area. Our charts, however, do indicate certain danger spots in Regional and Rural areas which are hidden in the overall surplus.

Our programme of building must therefore give priority to Metropolitan needs and in extra-Metropolitan areas confine itself to eradication of the one or two bad spots.

The Metropolitan Hospital Plan.

It will be seen from Table 3B that at the end of 1949 we had in actual fact a surplus of Acute General Beds and Institution Beds but so great was the shortage in Chronic Beds (631) that there was an overall deficiency of 236. This means that Chronic cases overflow into Acute beds and prevent them being used for their proper purpose and into Institute beds or Boardinghouses which are most unsuitable for the treatment of such cases.

Beds available in 1949 are shown on Table 7. Repatriation Hospital is here shown as 267 as that was the number of cases in the hospital at the time of the census of chronic cases. This 267 was exclusive of Pulmonary Tuberculosis with which this investigation is not concerned. The full accommodation of the Repatriation Hospital is not considered because it is not freely available to us but in order to keep our beds per population on a scale comparable with other countries the 267 patients and their beds had to be included in our calculation as the patients could be considered a normal responsibility of a country's hospitals. No efficiency factor was applied to them because the circumstances under which they are admitted and treated renders our method inapplicable.

Any hospital programme we undertake now should not have as its gaol eradication of 1949 deficiencies but rather those of 1960, because of the time lag in construction. We see therefore from Table 3B that in 1960 we will be deficient of 594 general beds, 1,006 chronic beds and 1,341 mental beds.

Approximately 350 of the available general beds exist in small private " A " and " C " Class Hospitals and should not be rated as first class beds. It is also doubtful to what extent it is justifiable to consider all beds in Fremantle Hospital and the Mount Hospital as first class.

It would seem probable that changing ideas in hospital construction and advances in medical and nursing technique will lead to a constant deterioration in the status of existing beds so that present general beds will tend to be suitable for chronic cases only and present chronic beds become Institutional. If the present privately-run hospitals and convalescent hospitals are to continue at some future date as chronic hospitals it may be necessary to aid them financially beyond the present ratio as they will not obtain the same level of fees from chronic as from acute cases.

It is logical, therefore, in the face of this deterioration in hospital status to build primarily first class beds and to allow the accommodation thus freed to be taken over by chronic cases which will in turn relieve the apparent though not actual shortage of Institute type of accommodation.

I would, therefore, suggest for our present horizon in hospital construction of first class general beds an addition of 1,144 beds. This will meet our requirement of 594 beds for 1960 and will replace the 550 sub-standard beds at present in use in " A " and " C " class hospitals and beds in Fremantle Hospital.

These replaced 550 sub-standard beds will reduce the requirement of 1,006 chronic beds for 1960 to 456.

This remaining deficiency of 456 will be further reduced by some 450 by additions to the Home of Peace and by constructing the Chest Hospital and the use of Out-Patient department, etc., in Fremantle as ward space.

As the increased need for Chest Hospital accommodation is in a large measure due to increased activity in case finding, it is a need that should diminish with the increase in Tuberculosis control and because of this should beds become surplus, the Chest Hospital could revert, in part at least, to the role of a Chronic Hospital. It is for this reason that the Chest Hospital is allotted beds from the Chronic requirement.

It remains now to cite the proposed 1,144 general beds.

FREMANTLE.

Present Population, 65,000.
Present Beds available :

Fremantle Hospital	196
Private Hospital	53
	249

Population, 1960, 91,000.
Present General Beds required at 5.56 per 1,000 ....= 361
General Beds Required, 1960 ....= 506

As in addition by 1960 Fremantle will require some 260 beds for chronics it would probably be very wise to allow the present hospital plus present private hospitals to be allotted for this and to provide entirely new construction for general beds.

I would therefore suggest the immediate start to a new hospital of 350 beds with expansion later to 500 beds.

MIDLAND JUNCTION.

Present Population, 32,000.
Present beds ....= 17
Present required General Beds ....= 178

Population, 1960, 44,800.
General Beds, 1960 ....=249

I would therefore suggest an immediate start to a 200-bed General Hospital with expansion to 250 later on a site capable of accommodating a 500-bed hospital.

If a Maternity wing is also built, 30 beds would become available in private hospitals for chronic cases. The remainder would be absorbed elsewhere.

To summarise :—

Construction Proposed—General Beds.

	Immediate.	1960.	Post 1960.
Fremantle	350	500	....
Midland Junction	200	250	500
Royal Perth Hospital	100	100	....
		850	

Thus our 1960 programme of 850 beds is 294 short of suggested requirements.

This 294 will probably be required as additions to Princess Margaret Hospital and eventually also for South Perth area.

Construction Proposed—Chronic Beds.

Chest Hospital	200
Home of Peace	200(?)

Our 1960 requirement of 1,006 chronic beds will therefore be met by :—

Chest Hospital	200
Home of Peace	200
Fremantle Hospital	250
Private hospitals replaced	350
Total	1,000

It is to be noted that the above suggested plan relegates any South Perth Hospital to the post 1960 era. That area will be amply covered by the strategically placed hospitals from Midland Junction to Fremantle Hospital.

MENTAL HOSPITALS.

Require 3.63 per 1,000 population.
Present available beds approximately 1,200.
Beds required, 1,815. Present Deficit, 615.
Beds required, 1960 = 2,541. 1960 Deficit, 1341.

It is therefore necessary to commence the construction of at least 600 beds immediately and to double this within 10 years.

It is obvious that this programme is beyond our present capacity to complete in time. We must therefore consider the possibility of prefabricated or temporary structure as additions to present hospitals in order to get us over the critical period.

Consideration must also be given to inaugurating a scheme of Domiciliary Treatment by a Visiting Nurse Service and a Domestic Help Service in order, as far as possible, to treat suitable cases in their own homes. (*See* " Talk to the Silver Chain District and Bush Nursing Association ") (Appendix III).

Average Stay in Hospital in Days.

Year.	1935–36.	1942–43.	1949–50.
Country Hospitals	13.2	11.2	10.1
Metropolitan Hospitals (R.P.H., Pr.M.H. and Fremantle	18.1	14.4	15

It has been suggested that modern methods and modern drugs are leading to earlier discharge from hospital and therefore we are in danger of over estimating our needs. In the above Table, 1935 is chosen as the year immediately preceding the sulphonamide era. 1942 precedes the penicillin era and 1949 as the latest year wherein the impact of our newer antibiotics would be perceptible.

Country hospitals showed a reduction of two days stay in hospital after introduction of sulphonamide and a further day after penicillin.

Metropolitan hospitals showed a bigger decline on the introduction of sulphonamides but with the newer antibiotics the average length of stay has increased.

This seems to indicate that more extensive work is being performed particularly in the surgical fields and that serious cases are now submitted for hospital treatment that previously would not have been admitted because of the impracticability of doing anything worthwhile for them.

However much therefore modern technique has shortened hospital stay in certain cases it has had no apparent effect on the overall average stay.

Note.

No account has been taken of Maternity bed requirements in this investigation but an index to the position in the various hospitals may be obtained from Chart S.U.X. in Appendix IV.

An Analysis of Chronic and Institutional Cases.

In estimating Chronic Bed Requirements an effort was made to distinguish between chronic and long-stay cases.

A chronic was defined as a person who in our present state of medical knowledge was likely to require in-patient treatment for the remainder of his life or who would require frequent re-admission for relapses of the same disease.

Table 8 gives the frequency in each age group of 1,087 chronic and Institute cases as they occurred in hospitals and institutes other than mental hospitals and institutes.

It will be seen that although cases considered suitable for Institute treatment are largely in the 60 and beyond age groups, in the chronic group a third are below the age of 60.

In Table 9A is an analysis of the disease of the 56 chronics 0–14 years of age. It will be seen that the bulk of these are orthopaedic and post-poliomyelitis patients and a considerable proportion of them could be termed " long-stay " cases rather than chronic.

If, however, in Table 9B, we consider only Varicose Ulcers, Fractures, Bronchiectasis, Pleural Effusion, Post-poliomyelitis, Skin Diseases and Infection of Urinary Tract as long stay cases, they represent only 41 out of 122. This leaves 81 out of a total of 516 chronics that remain after subtracting all mental cases. It would seem therefore that roughly a fifth of our true chronics are below the age of 60 years and that the expression " Chronic Sick " should not be considered synonymous with " Aged Sick."

Table 9C is an analysis of the main chronic diseases between 60 and 90 years.

Table 9D and 9E are similar for Institute cases.

Diabetes and Epilepsy cases are shown separately in Table 10 and Mental Cases in Table 11.

Apart from Senility and Cardiac diseases the main diseases in our chronic and Institute cases are Hypertension and Para and Hemiplegias which together account for 131 out of the 1,087 cases examined, and Mental cases accounting for another 136.

In preparing our estimate of beds required such mental cases have been shown as a mental hospital requirement not as a chronic hospital one. It will be noted that they occur mostly in elderly people and show the need for adequate hospital accommodation for the senile dementias and allied diseases. The figures also show the bearing adequate mental hospital accommodation would have on the general hospital situation as apparently more than a tenth of our chronics, at present in hospitals and institutions, are really in need of Mental Hospital or Institute care.

The problem of hypertension and cerebral circulation lesions is also a big one and warrants special accommodation and treatment.

Arthritis, fractured femurs and prostatic disease and its sequelae are also important features in our elderly sick which special accommodation and treatment might do much to reduce.

NOTE ON TUBERCULOSIS.

The number of beds required for tuberculosis will depend largely on the intensity of the case-finding campaign. At present case-finding is hampered because of the lack of beds in which to put the cases discovered.

Approxmately 50 beds are occupied by Pulmonary Tuberculosis in the Royal Perth Hospital but bed space and theatre sessions are insufficient to deal with the number of cases. Further progress in thoracic surgery, particularly cardiac surgery, will further strain the bed and theatre capacity. It is therefore apparent that a Chest Hospital, to include surgical treatment, will not only increase the tempo of case-finding and hasten the conquest of tuberculosis, but will also increase the Royal Perth accommodation by 50 much needed beds and will release theatre sessions for other work.

As one may be tempted to visualise the disappearance of tuberculosis and the end of the need for a specialised hospital for that disease, any estimate of beds for a Chest Hospital should be included within the requirements of Chronic Beds.

NOTE ON BLOOD TRANSFUSION SERVICE.

The increasing use of blood in medical practice and its ability to hasten convalescence requires consideration for a Blood Transfusion Centre in any hospital scheme. Reference to Appendix V will indicate the position in Western Australia.

NOTES ON MATERNITY BED POSITION IN METROPOLITAN AREA.

Estimate of Requirements—25 births per 1,000 population.

For average stay of 14 days each bed will accommodate $\frac{365}{14}$ births = **26 births, that is one** maternity bed is the approximate need per 1,000 of population.

To allow for peak periods .2 beds per 1,000 is added and thus maternity beds required is **1.2** per 1,000 population.

Population of metropolitan area is 324,000.

Therefore : Beds required = 389
Beds available = 300
Deficiency = 89

Expected population in 1960 = 453,000
Therefore : Beds required in 1960 = 544

It therefore appears that we have to produce another **244** Maternity beds by **1960.**

Suggested Plan.

Kind Edward Memorial Hospital Extend	150
Midland Junction—New Hospital	25
Woodside—New Hospital	26
Devonleigh—Extend	20
	221

KING EDWARD MEMORIAL HOSPITAL.

Apart from what is required to complete structurally the present King Edward Memorial Hospital I would advocate a delay in producing the large number of beds planned for that hospital for the following reasons :—

1. Obstetrics is an essential part of the General Practitioner's work and therefore the Maternity Hospital should be within easy reach of his practice. Centralisation of midwifery in an enlarged King Edward Memorial Hospital will deprive the majority of metropolitan practitioners of being present at the confinement of their cases.

2. Whatever doubt there may be about the expected expansion of the population to the suggested 40 per cent. increase between 1949 and 1960 there is little doubt that from 1950 till 1960 the number of women of childbearing age will be an abnormally small proportion of the total population. This is a direct result of the 1930–39 decade's low birth rate : the number of female children born from 1930–39 was only 841 more than those born in the previous decade. Migration will, of course, increase the figure but the present rapid increase in the number of births will not be maintained as it is largely due to a post-war increase in the birth rate similar to that shown in 1920. A return to more normal birth rates will counteract any continued rapid increase in the number of births even if assisted by migration.

   The increasing birth rate from 1940 onwards and the rapid increase in the number of births of female infants will, however, make itself felt from 1960 onwards in a similar rise in the birth rate. Our major increases in maternity bed accommodation can, therefore, be allowed to wait for that period and be examined in the light of hospital adjustment at that time.

3. Further consideration is required with regard to the future role of King Edward Memorial Hospital. A widening of its function to include Gynaceology would relieve pressure on general hospital beds and have considerable bearing on our long term planning.

WESTERN AUSTRALIA.

Year.	Birth Rate.	Nos. Female Births. (Live Births.)
1920	24.7	3,893
1921	23.4	3,819
1922	23.9	3,968
1923	22.6	3,840
1924	23.09	4,086
1925	22.23	3,975
1926	22.14	3,995
1927	22.00	4,116
1928	21.81	4,211
1929	22.00	4,503
		40,406
1930	21.98	4,373
1931	20.32	4,121
1932	18.31	3,843
1933	17.95	3,893
1934	17.66	3,843
1935	18.23	3,936
1936	18.84	4,192
1937	18.95	4,193
1938	19.87	4,466
1939	19.43	4,387
		41,247
1940	19.49	4,533
1941	21.62	5,010
1942	20.77	4,882
1943	21.98	5,124
1944	22.58	5,326
1945	21.89	5,272
1946	24.57	5,820
1947	25.60	6,294
1948	25.12	6,267
1949	25.35	6,685
		55,213
1950	25.47	6,935

PART II.

HOSPITAL PLANNING.

SITING OF HOSPITALS.

To provide a hospital service for the State an optimum balance must be struck between the ideal and what is a practicable possibility.

There are many difficulties encountered because of the variation in the spread of our population from high denisty down to extremely scattered communities and individuals.

The problem resolves itself into the consideration of three factors :—

(a) The People ;
(b) The Medical Practitioner ; and
(c) The Government.

(a) The people are the patients or potential patients and require an efficient hospital organisation within reasonable reach for any common emergency.

(b) The Medical Practitioner must be assured of sufficient suitable employment to maintain his interest and to provide him with a suitable income. Where practices in the country contain relatively few potential patients the medical practitioner must have access to a hospital for himself and his patients to maintain this interest and income. If he is denied the hospital he will cease to practise in a rural area.

(c) The Government must give some thought to the hospital requirements demanded by the people or it will be in danger of ceasing to be the Government. It must also ensure that the efficient hospital system is established with the maximum of economy.

Hospital Grouping.

It is an accepted and well established principle that hospitals should be arranged in three classes—Rural, Regional and Base.

They are arranged so that the Regional hospital supplies to an area a service, the facilities for which it is not practicable to put in a Rural Hospital. The Regional Hospital is situated so that it supports a number of Rural Hospitals. In the same way the Base Hospital represents the highest standard of hospitalisation the country can produce and it supports in its area a number of Regional Hospitals.

Distances between the Various Classes of Hospital.

This depends on many factors, including :—

(a) Practicability.
(b) Density of Population.
(c) Means of Communication.

As a general principle it may be accepted that in an area of fair density of population the bulk of the people should not be further away than one hour's journey from the Rural Hospital in order that they may have some measure of safeguard in emergency.

The journey from Rural Hospital to Regional Hospital is not so critical and can be accepted as two hours or even a little more.

From Regional to Base Hospital distance or time is of comparatively small consequence as transfers will seldom be of an emergent nature.

Rural Hospitals In Western Australia.

These units are uneconomic in accommodation, staff and equipment in that they provide for peak periods and events which occur with relative infrequency. They are difficult to staff because of the lack of communal amenities.

It may be possible to reduce them in number and size with the development of Regional Hospitals, but it will not be possible to abolish all of them because—

(a) A community large enough to support a doctor rightly demands that a doctor should be encouraged to practise in their midst.

(b) The majority of these communities are only large enough to support a doctor if he has the facilities to perform midwifery and a certain amount of surgery.

PRELIMINARY PLAN
OF
REGIONAL AND SUB-REGIONAL AREAS

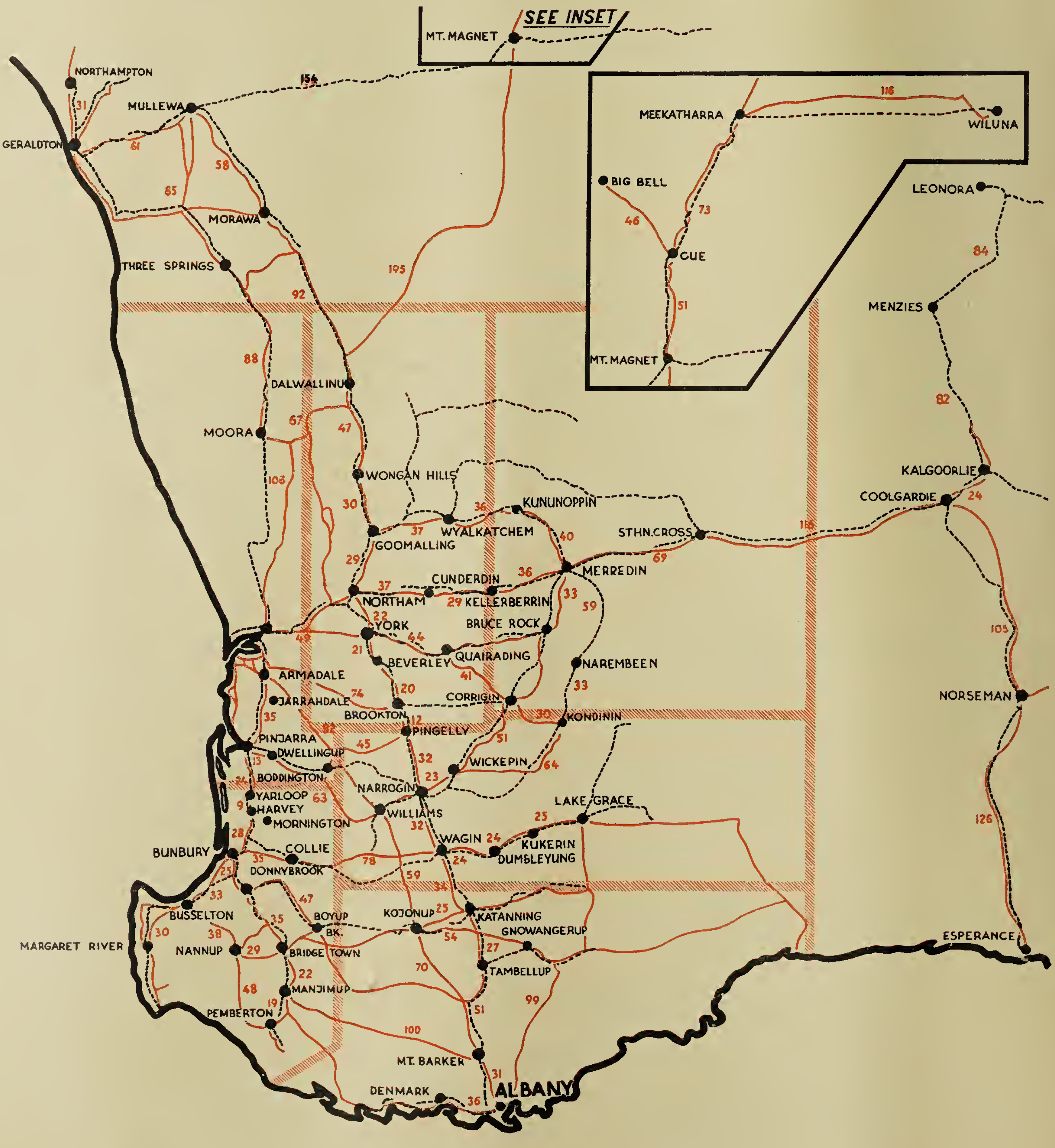
REFERENCE

Railways ---------

Roads

Hospital Towns ● CUE

Mileages between
Hospital Towns 33



(c) To secure these facilities the doctor must have a hospital in his practice. He cannot control such cases and other emergencies in a Regional Hospital two hours away.

(d) The presence of a resident doctor in a country town is considered an important factor in its progress and development.

Regional Hospitals In Western Australia.

These will be situated so as to serve the needs of a group of Rural Hospitals. They must be in a town with a population large enough to support several doctors in order that by group-practice or other methods these doctors may obtain some experience in specialisation and may provide a degree of consultant advice and assistance to Rural doctors.

There will, however, be a number of instances where the Rural doctor wishes to continue the care of his patient in the Regional Hospital and many occasions when the patient will expect him to do so. It will be entirely impracticable for him because of travelling time to give the patient the amount of personal attention required. It will, therefore, be necessary to supply some form of resident medical staff to supervise treatment and be responsible for any emergency occurring to the case of a distant doctor. It is debatable whether this Resident Medical Officer should be of Medical Superintendent status, Registrar or R.M.O. status. I would advocate in the first instance that he should be of senior R.M.O. status and as the hospital grows and the scheme develops consideration being given to appointment of a Medical Superintendent.

In addition to supplying some degree of specialised medical and surgical care the hospital will be equipped with Laboratory, X-ray and Physiotherapy services to a degree that will be decided initially adequate and economically practicable to instal and these and other specialised departments will evolve as the hospital and the patients increase and the skilled staff become available.

I would further suggest that a Local Advisory Committee be formed and that a D.M.O. be appointed similar to Kalgoorlie from the local practitioners to be responsible to the Department for the Hospital's management until such time as Medical Superintendents are appointed.

A suggested " Preliminary Plan of Regional Areas " is shown opposite.

Base Hospitals In Western Australia.

These are confined to the Metropolitan area and are likely to remain so in the foreseeable future.

DETAILED PLAN.

We now have a broad plan of Hospital Siting and Grouping and a standard of beds per 1,000 population for the various areas, together with a detailed chart of local deficiencies and surpluses. It now remains to produce a detailed plan of Regional Areas and Rural Hospital Groups with a schedule of priority for construction.

The number of doctors practising in a town is a reasonable method of estimating the amount of material available in the town to support an interest in specialties. Apart from Perth there are only seven towns in W.A. with four or more resident medical practitioners. They are Kalgoorlie, Bunbury, Northam, Geraldton, Collie, Albany and Narrogin, in descending order of populations.

Kalgoorlie has already in effect and function a Regional Hospital.

Narrogin has a population too small at present to support a Regional Hospital.

Collie is close to the larger centre of Bunbury and is somewhat isolated from Rural Hospitals. Northam is a potential Regional Hospital but at present its proximity to Perth limits its claim to priority to be developed as such.

We are left with Albany, Bunbury and Geraldton.

Albany has at present a relatively small population but it is the centre of a rapidly developing countryside with an ever increasing population. It is very isolated from the Base Hospitals in Perth. It, at present, has a very inadequate and outmoded hospital. The chart indicates its present critical condition in beds. It is therefore accorded a high priority for Regional Hospital Construction.

Bunbury is also the centre of a rapidly developing area. It is at present inadequately supplied with beds in quantity and quality. It is also in a Region in which several hospitals show critical or near critical levels, *e.g.*, Collie, Bridgetown, Manjimup.

After Perth and Kalgoorlie, Bunbury has the largest population and most doctors. It must therefore have a priority for Regional Hospital construction similar to that of Albany.

Geraldton shows a satisfactory position on our bed chart but it shows on the table a surprisingly high number of Bed Days Efficiently used. This indicates that it supplies a Rural population far in excess of the normal proportion and there is in fact a shortage of beds in Geraldton. It is an isolated town and an adequate hospital there would not only cover a wide agricultural area in the neighbourhood but also all the country to the North.

These three then must be our first Regional Hospitals.

Further developments may bring Northam into the category.

There is also some argument for producing at a later date a hospital of lesser category than the Regional Hospital but larger and better equipped than the Rural Hospital. The development of such a Sub-Regional Hospital must await events, but its possibility must be borne in mind in the overall plan. Such places as Narrogin, Merredin, Derby and possibly Pinjarra may come into this category and any present necessity to improve these hospitals should be favourably considered in the light of their possible future role.

There is a type of hospital which by virtue of its isolation does not fit readily into our Regional Grouping Scheme such as Esperance, Norseman, Lake Grace, Moora, Meekatharra, Carnarvon and other North Coast hospitals. It is necessary to give them special consideration and develop them in proportion to their local responsibilities rather than as periphery hospitals of a Regional scheme.

Rural hospitals in general however must now await the development of the Regional Hospital and expansion in bed capacity in the area should largely take place in the Regional Hospital. There are however, certain works and improvements considered permissible for Rural Hospitals at present. Certain repairs and renovations must be carried out and obvious inadequacies rectified.

Further the need for accommodation may be so urgent that it is unwise to await the appearance of a Regional Hospital and additions to Rural Hospitals may be considered in the light of expediency. Such is the case at Mt. Barker. Moreover the condition of the Rural Hospital may be so inferior that extensive improvements and additions are necessary such as is the case with Denmark.

In general however, every effort should be made to resist the growth and increase of Rural Hospitals to conserve money and material for the Regional Hospital. It may even be possible with the development of the latter to close a number of the closer in Rural Hospitals. For example there seems little justification for a hospital at Dwellingup 15 miles away from the new large hospital at Pinjarra. Similar situations exist at Brookton and Dumbleyung. All improvements and additions to Rural Hospitals or re-opening those that are closed must be considered in the light of the future relationship of those hospitals and their areas to a Regional Hospital.

To summarise, our Hospital Programme is :—

1. To reduce the critical situation in the Metropolitan Area in general (acute, chronic and midwifery), T.B., and Mental Beds.
2. To inaugurate our Regional Scheme by constructing Regional Hospitals at Albany, Bunbury and Geraldton in that order.
3. To provide in isolated communities adequate hospital cover to meet the reasonable needs of the population and to provide a doctor with the facilities to conduct his practice.
4. To restrict work on other Rural Hospitals to maintenance and eradication of major inadequacies.
5. To explore the possibility of economy in hospital beds by increased use of Out-Patient treatment and Home Nursing and to consider ways and means of producing an effective Domiciliary Nursing and Home Help Service.

Notes.

It must be borne in mind that although the programme suggested is enormous and expensive the rate of construction is so slow that there is little danger of overbuilding and we are likely to remain in certain areas below the critical level for many years. Should some radical change in medical technique suddenly alter the need for the large number of hospital beds our distance behind schedule and our rapidly growing population are complete safeguards against overbuilding.

RECOMMENDED PROGRAMME IN ORDER OF PRIORITY.

1. With the assistance of the Silver Chain develop a Domiciliary Nursing and Domestic Help Service.
2. Acquire large houses for conversion to hospitals and centres for Domiciliary Nursing Service.
3. Convert Woodside to 26 bed Midwifery Hospital.
4. Convert Bundi Kudja and any other suitable house to annexe to Fremantle Hospital.
5. Commence 200 bed chest hospital.
6. Complete I.D.B. by adding approximately 100 beds.
7. Complete Royal Perth Hospital by adding approximately 100 beds.
8. Commence 600 bed Mental Hospital to be completed in sections.
9. Build 25 bed Midwifery wing at Midland Junction.
10. Commence Albany Regional Hospital.
11. Commence 350 bed Fremantle Hospital.
12. House Block Nurses at King Edward Memorial Hospital and school at I.D.B. Convert all Devonleigh to Maternity Hospital.

13. Commence Bunbury Regional Hospital.
14. Build Moora General Hospital.
    Build Meekatharra General Hospital.
    Build Carnarvon General Hospital.
15. Build Narrogin Maternity Wing.
16. Commence 200 bed Midland Junction Hospital.
17. Build Midwifery Wing Manjimup.
18. Commence Geraldton Regional Hospital.
19. Build Merredin Midwifery Wing.
20 Increase Midwifery accommodation at Bridgetown.

A high priority in this list must be given to the Red Cross Blood Transfusion Service.

Further decision is required on :—

(a) Who will bear the cost ?
(b) When can the site be cleared ?

It has been suggested that as our deficiency is largely for chronic cases an inferior type of structure is permissable in the need for economy. This is not so. The State has only one really first class hospital for general adult cases. It requires more and is rapidly requiring very much more. It is therefore good policy to build a large proportion of first class beds and allow the old ones to take the place of chronic or other minor category hospitals.

Note on Constructional Plans for Hospitals.

Three authorities work in close collaboration in the preparation of plans.

1. The Architects.
2. The Medical Department.
3. The Local Hospital Board and Staff for whom the hospital will be built.

Plans are prepared to incorporate all modern features that are economically practicable and all hospitals are planned on an extendable pattern that will cover the needs of the area during the expected life of the hospital.

TABLE I.

MAJOR HOSPITALS.

Hospital.	No. of Cases.	Varicose Ulcers.			Pneumonia.			Pyelitis.			Cholecystitis.			Prostatectomy.			Cholecystectomy.			Partial Gastrectomy.			Fothergill.			Acute Tonsillitis.	Urti Influenza.	Average Total.	I.T.	Efficient Use of Occupied Beds.
		C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.				%	
Royal Perth	11,045	17	455	26·76	346	4,458	12·88	53	464	8·75	54	558	10·53	84	2,186	26·00	83	1,489	17·94	38	859	22·60	73	1,444	19·78	67	102	145	1·5	(127/145 × 80 + 20)·996 = 90%
Fremantle Hospital Public Beds	2,935	13	469	36·08	50	773	15·46	20	301	15·50	14	244	17·93	2	63	31·50	9	211	23·44	6	121	20·17	2	30	15·00	82	40	175	4·2	(127/175 × 80 + 20)·981 = 77%
St. John of God, Subiaco	5,344	36	455	12·64	45	636	14·13	14	234	16·71	3	33	11·00	24	580	24·17	73	1,571	21·52	16	368	23·00	75	1,880	25·07	28	16	148	·8	(127/148 × 80 + 20) = 89%
Royal Adelaide	14,388	27	1,005	37·22	170	3,230	19·41	60	668	11·13	187	2,847	15·23	77	2,882	37·43	195	4,647	23·83	48	1,375	28·65	79	1,928	24·41	207	118	197	2·3	(127/197 × 80 + 20)·991 = 71%
Best Composite Hospital	....	....	....	12·64	....	....	12·88	....	....	8·75	....	....	10·53	....	....	24·17	....	....	17·94	....	....	20·17	....	....	19·78	....	....	127	·8	Total Average = 82%
Brisbane General Hospital	22,741	32	677	21·15	619	8,721	14·09	114	1,066	9·35	194	3,197	16·48	121	8,386	69·30	266	6,237	23·45	40	1,388	34·70	63	1,692	26·85	239	....	215	·1	(127/215 × 80 + 20)·999 = 67%

CHILDREN'S HOSPITALS.

Hospital.	No. of Cases.	Pneumonia.			Enteritis.			Tonsilitis.			Influenza.			Harelip op.			Herniorrophy.			Appendicectomy.			Tonsilectomy.			I.T.	Total Average.	Efficient Use of Occupied Beds.
		C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	%		
Princess Margaret	5,444	171	1,454	8·5	294	1,628	5·5	207	850	4·1	16	63	3·9	31	580	18·7	87	558	6·4	7	41	5·8	383	989	2·6	4·1	56	$\left\{\frac{43}{56}\times 80+20\right\}\frac{98\cdot 8}{100} = 80\%$
Adelaide Children's Hospital	6,136	239	2,067	8·6	188	1,898	10·0	91	552	6·0	134	760	5·6	17	179	10·5	91	709	7·8	118	1,168	9·9	832	832	1·0	3·7	59	$\left\{\frac{43}{59}\times 80+20\right\}\frac{98\cdot 9}{100} = 77\%$
Sydney Royal Alexandra *Public*	8,791	560	7,147	12·8	272	4,288	15·8	140	908	6·5	51	271	5·3	17	390	22·9	172	1,917	11·1	356	3,682	10·3	2999	6,441	2·14	2·2	87	$\left\{\frac{43}{87}\times 80+20\right\}\frac{99\cdot 4}{100} = 59\%$
Sydney Royal Alexandra *Private*	2,621	59	658	11·1	19	317	16·7	5	33	6·6	5	35	7·0	24	433	18·0	65	627	9·6	184	1,717	9·3	994	2,824	2·8	·4	81	$\left\{\frac{43}{81}\times 80+20\right\} = 62\%$
Brisbane Children's Hospital	6,847	288	1,873	6·5	378	5,509	14·6	323	1,412	4·4	135	521	3·1	37	516	13·9	61	567	9·3	69	762	11·0	1619	3,248	2·0	6·7	65	$\left\{\frac{43}{65}\times 80+20\right\}\frac{97\cdot 9}{100} = 71\%$
Best Composite Hospital	....	....	....	6·5	....	....	5·5	....	....	4·1	....	....	3·1	....	....	10·5	....	....	6·4	....	....	5·8	....	....	1·0	·4	43	

3 per cent. T.I. Inefficiency = 1 per cent. Total Inefficiency.

RURAL AND REGIONAL HOSPITALS—Grouped according to number of Doctors.

Hospital.	No. of Drs.	Cases.	Pneumonia.			Enteritis.			Tonsilitis.			Influenza.			Cholecystitis.			Herniorrophy.			Appendicectomy.			Tonsilectomy.			I.T.	Total Average.	Efficient Use of Occupied Beds.
			C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	%		
Harvey	1	529	25	164	6·56	22	173	7·86	24	88	3·66	18	105	5·83	8	50	6·25	9	130	14·44	6	74	12·33	1	4	4·00	7·9	60·93	(45/61 × 80+20) 97·1/100 = 77%
Big Bell	1	445	24	267	11·12	19	58	3·05	18	82	4·55	43	232	5·39	12	98	8·16	....	....	....	7	68	9·71	....	....	....	13·7	41·98	(28/42 × 80+20) 93·8/100 = 68%
Morawa	1	187	7	50	7·14	6	39	6·50	7	95	13·28	17	136	8·00	2	6	3·00	....	....	....	9	197	21·88	....	....	....	12·8	59·80	(28/60 × 80+20) 94·3/100 = 54%
Donnybrook	1	224	16	118	7·38	7	31	4·43	7	51	7·29	7	31	4·43	18	79	4·39	2	41	20·50	4	52	13·00	1	6	6·00	6·3	67·42	(45/67 × 80+20) 96·5/100 = 73%
Kellerberrin	1	685	24	175	7·29	42	190	4·52	10	57	5·70	117	847	7·24	8	86	10·75	2	32	16·00	68	755	11·10	9	61	6·78	18·6	69·38	(45/69 × 80+20) 98/100 = 72%
Pinjarra (M)	1	374	21	158	7·52	6	17	2·83	4	20	5·00	12	81	6·75	13	112	8·60	9	182	20·20	28	422	15·10	4	14	3·50	4·3	69·50	(45/69 × 80+20) 99·2/100 = 73%
Cunderdin	1	542	17	182	10·71	19	85	4·47	21	118	5·62	21	197	9·38	5	39	7·80	3	51	17·00	39	418	10·72	4	10	2·50	7·7	68·20	(45/68 × 80+20) 96·7/100 = 71%
Meekatharra	1	218	12	113	9·42	10	43	4·30	5	22	4·40	4	24	6·00	3	18	6·00	1	16	16·00	10	96	9·60	....	....	....	4·1	55·72	(34/56 × 80+20) 99·3/100 = 75%
Esperance	1	296	15	151	10·07	16	137	8·56	10	56	5·60	13	118	9·08	....	....	....	....	....	....	2	33	16·50	....	....	....	7·7	49·81	(24/50 × 80+20) 96·7/100 = 56%
Goomalling	1	211	3	25	8·33	19	151	7·95	1	12	12·00	31	318	10·26	....	....	....	....	....	....	....	....	....	....	....	....	15·1	38·54	(15/38 × 80+20) 93/100 = 48%
Mt. Barker	1	287	4	14	3·50	4	16	4·00	6	38	6·33	20	94	4·70	5	32	6·40	3	47	15·67	9	118	13·11	11	76	6·91	9·1	60·62	(45/61 × 80+20) 96·4/100 = 76%
Carnarvon	1	407	15	82	5·46	9	45	5·00	7	18	2·57	30	205	6·83	4	30	7·50	....	....	....	6	84	14·00	....	....	....	9·6	41·36	(28/41 × 80+20) 96·1/100 = 72%
Bruce Rock	1	399	25	297	11·88	10	45	4·50	12	58	4·83	13	129	9·92	2	10	5·00	....	....	....	4	48	12·00	16	94	5·88	6·2	54·01	(34/54 × 80+20) 98·1/100 = 69%
Onslow	1	112	7	64	9·44	2	13	6·50	3	16	5·33	5	27	5·40	....	....	....	....	....	....	....	....	....	....	....	....	7·1	26·37	(15/26 × 80+20) 97·5/100 = 64%
Wyndham	1	194	7	74	10·57	20	63	3·15	5	22	4·40	13	114	8·77	2	19	9·50	....	....	....	....	....	....	....	....	....	9·3	36·39	(19/36 × 80+20) 96·3/100 = 60%
Northampton	1	169	6	45	7·50	1	8	8·00	5	16	3·20	....	....	....	2	8	4·00	2	34	17·00	10	138	13·80	....	....	....	3·0	53·50	(35/53 × 80+20) 99·9/100 = 73%
Corrigin....	1	314	3	37	12·33	22	71	3·23	14	53	3·79	31	193	6·23	6	39	6·50	1	22	22·00	1	17	17·00	....	....	....	14·3	71·08	(39/71 × 80+20) 93·4/100 = 60%
Coolgardie	1	341	12	117	9·75	35	199	5·68	15	104	6·93	47	336	7·15	....	....	....	....	....	....	....	....	....	....	....	....	18·2	29·51	(15/30 × 80+20) 91·2/100 = 55%
Wyalkatchem	1	456	16	111	6·94	10	31	3·10	12	52	4·33	12	80	6·67	7	33	4·71	2	53	26·50	17	175	10·29	....	....	....	5·3	62·54	(39/63 × 80+20) 98·6/100 = 69%
Kondinin	1	218	3	20	6·67	5	26	5·20	4	34	8·50	10	82	8·20	6	53	8·83	2	40	20·00	18	237	13·17	....	....	....	6·4	50·57	(39/51 × 80+20) 98/100 = 79%
Kojonup	1	178	2	38	19·00	9	47	5·22	3	17	5·67	18	131	7·28	4	36	9·00	1	17	17·00	4	64	16·00	1	9	9·00	11·8	88·17	(45/88 × 80+20) 94·9/100 = 58%
Narembeen	1	144	9	52	5·78	....	....	....	4	17	4·22	9	42	4·67	1	7	7·00	....	....	....	6	80	13·33	2	15	7·50	9·2	42·50	(31/42 × 80+20) 96·4/100 = 76%
Southern Cross	1	261	16	158	9·88	5	27	5·40	....	....	....	10	93	9·30	2	15	7·50	....	....	....	2	31	15·50	....	....	....	3·8	47·58	(26/48 × 80+20) 99·4/100 = 63%
Norseman	1	380	15	215	14·33	30	157	5·23	6	31	5·17	31	417	13·45	6	65	10·83	4	203	50·75	6	78	13·00	11	156	14·17	9·7	126·93	(45/126 × 80+20)96·1/100 = 47%
Brookton	2	152	10	81	8·10	10	67	6·70	11	69	6·27	12	102	8·50	2	9	4·50	....	....	....	2	53	26·50	3	21	7·00	15·1	67·57	(34/68 × 80+20) 93/100 = 56%
Wongan Hills	1	434	34	317	9·32	24	101	4·21	3	12	4·00	15	90	6·00	6	49	8·17	2	31	15·50	3	44	14·67	....	....	....	4·1	61·87	(39/62 × 80+20) 99·3/100 = 70%
Margaret River	1	630	36	253	7·03	11	43	3·91	18	78	4·33	21	92	4·38	23	159	6·91	8	88	11·00	21	197	9·38	6	35	5·83	6·2	52·77	(45/53 × 80+20) 98·1/100 = 86%
Kununoppin	1	303	15	161	10·73	8	57	7·12	10	59	5·90	12	117	9·75	4	31	7·75	2	26	13·00	9	124	13·78	....	....	....	7·2	68·03	(39/68 × 80+20) 97·5/100 = 64%
Beverley	2	246	18	110	6·11	4	9	2·25	1	34	34·00	6	57	9·50	5	24	4·80	....	....	....	2	35	17·50	4	16	4·00	2·8	78·16	(34/78 × 80+20) 100/100 = 55%
York	1	310	26	416	16·00	3	28	9·33	4	17	4·25	18	113	6·28	4	23	5·75	3	49	16·33	16	239	14·94	....	....	....	7·1	72·88	(39/73 × 80+20) 98·1/100 = 62%
Dalwallinu	1	453	19	200	10·53	18	78	4·33	7	30	4·29	52	345	6·63	7	69	9·86	4	70	17·50	15	202	13·47	2	16	8·00	13·0	74·61	(45/75 × 80+20) 94·2/100 = 64%
Broome	1	186	2	20	10·00	4	18	4·50	2	7	3·50	4	14	3·50	....	....	....	1	6	6·00	5	69	13·80	....	....	....	3·2	41·30	(35/41 × 80+20) 99·8/100 = 88%
Wickepin	1	58	4	42	10·50	4	10	2·50	1	4	4·00	9	110	12·22	....	....	....	....	....	....	....	....	....	....	....	....	17·2	29·22	(15/29 × 80+20) 91·8/100 = 56%
Denmark	1	257	21	210	10·00	9	45	5·00	3	15	5·00	21	180	8·57	1	9	9·00	1	10	10·00	6	57	9·50	....	....	....	9·3	57·07	(39/57 × 80+20) 96·3/100 = 72%
Yarloop....	1	381	8	110	13·75	55	453	8·24	12	72	6·00	19	172	9·05	....	....	....	1	23	23·00	4	48	12·00	....	....	....	8·1	72·04	(35/72 × 80+20) 97/100 = 57%
Pingelly	1	240	18	142	7·89	13	57	4·38	9	39	4·33	16	150	9·37	10	114	11·40	....	....	....	6	78	13·00	....	....	....	10·4	50·37	(28/50 × 80+20) 95·7/100 = 62%
Jarrahdale	1	187	6	48	8·00	4	25	6·25	3	19	6·33	1	2	2·00	5	35	7·00	2	48	24·00	12	164	13·67	....	....	....	2·1	67·25	(39/67 × 80+20) 100/100 = 67%
Roebourne	1	132	8	52	6·50	3	16	5·33	1	4	4·00	14	70	5·00	1	4	4·00	....	....	....	....	....	....	....	....	....	11·3	24·83	(19/25 × 80+20) 95·2/100 = 77%
Marble Bar	1	59	3	15	5·00	2	7	3·50	....	....	....	2	7	3·50	....	....	....	....	....	....	....	....	....	....	....	....	3·4	12·00	
Port Hedland	1	167	6	59	9·83	12	58	4·83	2	6	3·00	10	40	4·00	5	20	4·00	5	70	14·00	17	260	15·30	1	4	4·00	7·2	58·96	(45/59 × 80+20) 97·5/100 = 79%
Wagin	1	378	15	99	6·60	1	3	3·00	2	11	5·50	5	32	6·40	13	60	4·61	3	71	23·67	17	307	18·06	9	58	6·44	1·9	74·28	(45/74 × 80+20) 100/100 = 69%
Best Composite Hospital	....	....	....	....	5·46	....	....	2·83	....	....	2·57	....	....	4·00	....	....	4·00	....	....	0·11	....,	....	9·38	....	....	5·83	2·8	45·07	Average .... = 67%
			C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	C.	D.	A.	%		
Merredin	2	1,092	88	536	6·09	13	52	4·00	29	120	4·13	8	34	4·25	17	60	3·53	5	95	19·00	36	317	9·63	2	15	7·50	3·4	58·13	48/58 × 80+20 = 86%
Katanning	2	951	39	298	7·64	21	116	5·51	24	112	4·67	33	266	8·06	12	92	7·67	10	239	23·9	35	438	12·51	9	77	8·55	6·0	78·51	(48/79 × 80+20) 98·5/100 = 68%
Bridgetown	2	489	20	187	9·35	8	21	2·62	3	6	2·00	12	61	5·08	24	87	3·62	11	152	13·82	24	256	10·62	25	107	4·28	3·1	51·44	48/51 × 80+20 = 95%
Busselton	2	816	20	266	13·30	28	273	9·75	30	254	8·47	50	464	9·28	20	153	7·65	4	89	22·25	14	168	12·00	9	79	8·78	9·8	91·48	(48/91 × 80+20) 96·4/100 = 60%
Dwellingup	2	458	12	146	12·16	12	90	7·50	5	20	4·00	13	71	5·47	10	84	8·40	8	137	17·12	23	367	15·95	10	68	6·80	4·0	77·40	(48/77 × 80+20) 99·7/100 = 70%
Manjimup	2	605	46	306	6·65	37	152	4·11	10	38	3·80	27	117	4·33	12	51	4·25	8	107	13·37	26	257	9·88	11	67	6·09	6·1	52·48	(48/52 × 80+20) 98·5/100 = 93%
Best Composite Hospital	....	....	....	....	6·09	....	....	2·62	....	....	3·80	....	....	4·25	....	....	3·53	....	....	13·37	....	....	9·63	....	....	4·80	3·4	47·57	Average .... = 79%
Collie	4	1,336	29	251	8·64	23	129	5·61	12	40	3·33	22	125	5·68	18	67	3·72	27	465	17·22	53	416	7·85	20	67	3·35	2·5	55·40	50/55 × 80+20 = 93%
Fremantle Public	....	2,935	50	773	15·46	91	455	5·00	82	430	5·24	30	466	11·65	77	580	7·53	15	238	15·87	67	756	11·28	17	98	5·77	4·2	77·80	(50/78 × 80+20) 99/100 = 70%
Fremantle Private	....	1,651	20	233	11·65	21	103	4·95	77	253	3·28	8	45	5·62	20	140	7·00	30	563	18·77	82	1,229	14·99	41	195	4·75	5·1	71·01	(50/71 × 80+20) 98·5/100 = 75%
Kalgoorlie	9	3,922	126	1,022	8·11	107	502	4·69	40	237	5·92	29	154	5·31	71	421	5·93	39	544	13·95	89	912	10·25	29	140	4·83	1·7	58·99	50/59 × 80+20 = 88%
Albany	4	1,148	12	173	14·41	25	169	6·76	12	154	12·83	16	125	7·81	24	157	6·54	14	304	21·71	80	1,082	13·52	48	203	4·23	2·4	87·81	50/88 × 80+20 = 65%
Geraldton	4	1,338	53	491	9·26	41	228	5·56	34	204	6·00	47	481	10·23	27	157	5·82	17	342	20·12	44	585	13·30	29	174	6·00	6·0	76·29	(50/76 × 80+20) 98/100 = 72%
Northam	3	1,952	86	998	11·60	61	313	5·13	15	66	4·40	82	626	7·63	56	396	7·07	11	214	19·45	76	830	10·92	33	206	6·24	5·0	72·44	(50/72 × 80+20) 98·5/100 = 75%
Narrogin	4	1,441	89	671	7·54	32	158	4·94	27	169	6·25	80	618	7·72	36	208	5·78	17	339	19·94	68	591	8·69	43	172	4·00	7·4	64·86	(50/65 × 80+20) 97·2/100 = 80%
Bunbury	7	1,322	41	476	11·61	33	201	6·09	16	83	5·19	90	850	9·44	17	88	5·18	21	395	18·81	44	447	10·16	14	77	5·50	8·0	71·98	(50/72 × 80+20) 96·8/100 = 74%
Best Composite Hospital	....	....	....	....	7·54	....	....	4·69	....	....	3·28	....	....	5·21	....	....	3·72	....	....	13·95	....	....	7·85	....	....	3·35	2·4	49·59	Average .... = 77%

TABLE II.

CHRONIC BED REQUIREMENTS.

Hospital, etc.	Number of Beds occupied by chronics.	Beds required per 1,000 population. (Population, 324,000).
Sunset	243	
Little Sisters of Poor	44	
Other Hospitals and Boarding Houses, etc.	343	
	630	1·94
Cases advised admission by General Practitioners but accommodation not available	....	·97
Total	....	2·9

INSTITUTE BED REQUIREMENTS.

Hospital, etc.	Number of beds occupied by chronics.	Beds required per 1,000 population (Population, 324,000).
Sunset	148	
Little Sisters of Poor	133	
Other Hospitals and Boarding Houses, etc.	175	
	456	1·4
Cases advised admission by General Practitioners but accommodation not available	....	·65
Total	....	2·05

MENTAL BED REQUIREMENTS.

Hospital.	Number of Cases.	Beds required per 1,000 population. (Population, 500,000-State.)
Claremont	1,344	....
Lemnos	86	....
Whitby	36	....
Greenplace	20	....
Heathcote	110	....
	1,596	
Sunset	32	....
Little Sisters of Poor	1	....
All other Hospitals, Institutions, etc.	107	....
Total	1,726	3·47
Cases requiring admision as advised by General Practitioners but accommodation not available	....	·16
Total	....	3·63

TABLE IIIA.

METROPOLITAN AREA.

Hospital.	Doctors.	Ward Beds.	Verandah Beds.	No. of Patients.	Bed Days.	Per cent. Efficiency of Occupied Beds.	Bed Days Efficiency Used.	Possible Bed Days.	Capacity Bed Days.	Saturation per cent.	Beds actually used at 100 per cent. efficiency.	Beds used at permissible efficiency of 85 per cent.	Beds required at 100 per cent. efficiency per 1,000 population. Population 324,000.	Beds required per 1,000 population with permissible efficiency of 85 per cent.
Royal Perth	....	504	....	11,045	164,077	90	147,669	183,960	165,564	89	449	....	....	....
Fremantle	....	181	....	4,577	61,527	77	47,376	65,865	59,279	80	145	....	....	....
Princess Margaret	....	254	....	5,444	73,812	80	59,050	92,710	83,439	70	178	....	....	....
Jarrahdale	1	9	....	187	2,094	67	1,403	3,285	2,956	47	5	....	....	....
St. John of God	....	270	....	5,344	92,842	89	82,629	98,550	88,695	93	252	....	....	....
Armadale	....	2	....	145	743	....	....	....	....	....	....	....	....	....
Mount	....	75	....	....	27,551	....	....	....	....	....	....	....	....	....
St. John of God, Belmont	....	28	....	....	12,767	....	....	....	....	....	....	....	....	....
Westminster	....	23	....	....	9,389	....	....	....	....	....	....	....	....	....
St. Anne's	....	18	....	....	7,083	....	....	....	....	....	....	....	....	....
St. Omer	....	28	....	....	9,105	....	....	....	....	....	....	....	....	....
Sa Borne	....	13	....	....	4,759	....	....	....	....	....	....	....	....	....
Bethseda	....	14	....	....	7,280	....	....	....	....	....	....	....	....	....
Beaufort	....	10	....	....	5,972	....	....	....	....	....	....	....	....	....
Tresillian	....	13	....	....	4,471	....	....	....	....	....	....	....	....	....
Avro	....	28	....	....	9,388	....	....	....	....	....	....	....	....	....
Lucknow	....	16	....	....	6,197	....	....	....	....	....	....	....	....	....
St. Helens	....	9	....	....	2,743	....	....	....	....	....	....	....	....	....
Bundi Kudja	....	11	....	....	4,887	82	....	....	....	....	....	....	....	....
	....	288	....	....	112,335	....	92,115	105,120	94,608	97	279	....	....	....
Total	....	1,506	....	....	506,687	....	428,839	....	....	....	1,308	(conts. 8 pe	r cent. chro	nic, etc.)
Reduction of 8 per cent. for Removal of Chronics	....	....	....	....	....	....	....	....	....	....	1,203	1,415	....	....
Repatriation Hospital	....	267	....	....	....	....		remove 25	chronics	....	242	242	....	....
Convalescent Hospitals	....	144	remove 41	per cent. c	hronics		....	....	....	....	85	85	....	....
	....	1,917	....	....	....	....	....	....	....	....	1,530	1,742	4·7	5·4
Allowance for Waiting List	....	....	....	....	....	....	....	....	....	....	....	....	·16	·16
Grand Total	....	1,917	....	....	506,687	85	428,839	....	....	....	1,530	1,742	4·86	5·56

Table IIIb.

METROPOLITAN AREA—POPULATION 324,000 APPROXIMATE.

	Required per 1,000 Population.	Required at Present 1950.	Beds Available 1950.	Surplus or Deficit 1950.	Beds Required 1960 (40 per cent. Increase).	Surplus or Deficit 1960.
General Beds	5·56	1,801	1,927	+ 126	2,521	— 594
Chronic Beds	2·9	939	308	— 631	1,314	— 1,006
Institution Beds	2·05	664	933	+ 269	930	+ 3
	....	3,404	3,168	— 236	4,765	— 1,597
Mental Beds for Population 500,000 (State)	3·63	1,815	1,200 approx.	— 615	2,541	— 1,341

Table IIIc.

CHRONIC AND GENERAL BEDS COMBINED.

METROPOLITAN AREA—POPULATION 324,000.

Beds Available.	Efficiency.	Bed Days.	Efficiency Bed Days.	General Beds required at desired level of 5·56 per 1,000 population or 85 per cent. efficiency.	Chronic Beds required at 2·9 per 1,000 population.	Total General and Chronic Desired.	General Beds Required at Critical Level of 4·86 per 1,000 Population or 100 per cent. Efficiency.	Chronic Beds Required at 2·9 per 1,000 Population.	Total General and Chronic Critical.	Beds Available General and Chronic per 1,000 Population.	Beds Required 1960.	
											Desired.	Critical.
2,235	85	506,687	428,839	1,801	939	2,740	1,575	939	2,514	6·9	3,835	3,520

TABLE IIID.

REGIONAL HOSPITALS

Hospital.	Ward Beds.	Verandah Beds.		Efficiency.	Bed Days.	Efficiency Bed Days.	Population.	Beds Required at 6·2 per 1,000 Population or 80 per cent. Efficiency.	Beds Required for Chronic at 1·9 per 1,000 Population.	Total Beds Desired Acute and Chronic.	Beds Required at 5 per 1,000 Population or 100 per cent. Efficiency.	Beds Required for Chronics at 1·9 per 1,000 Population.	Total Beds Critical, Acute and Chronic.	Beds Available per 1,000 Population.		Beds Acute and Chronic Required in 1960	
		Enclosed.	Open.											Ward.	Ward plus Enclosed Verandah.	Desired.	Critical.
Geraldton	52	1	15	72	17,513	12,609	....	....	....	....	....	....	....	....	....	....	....
Rosella	10	....	....	*82	5,924	4,858	....	....	....	....	....	....	....	....	....	....	....
St. John of God	25	....	....	*82	8,853	7,249	....	....	....	....	....	....	....	....	....	....	....
	87	1	15	....	32,290	24,716	9,688	60·1	18·4	79	48·5	18·4	67	9	9	110	94
Northam	61	30	12	75	20,121	15,091	9,785	60·8	18·6	80	49	18·6	68	6·3	9·3	112	95
Narrogin	41	....	19	80	12,840	10,272	4,264	26·7	8·2	35	21·5	8·2	30	9·6	9·6	49	42
Collie	27	20	12	93	13,736	12,774	6,930	42·8	13·1	56	34·5	13·1	48	3·9	6·8	79	67
Bunbury	32	....	17	74	12,340	9,132	....	....	....	....	....	....	....	....	....	....	....
St. John of God	28	....	....	*82	9,134	7,490	....	....	....	....	....	....	....	....	....	....	....
Stirling	6	....	....	*82	2,574	2,111	....	....	....	....	....	....	....	....	....	....	....
	66	....	17	....	24,048	18,733	11,912	73·8	22·6	97	59·5	22·6	83	5·5	5·5	135	115
Albany	31	5	4	65	14,790	9,613	6,432	39·7	12·2	52	32	12·2	45	4·8	5·6	73	62
	313	56	79	....	....	....	49,011	....	....	....	....	....	....	....	....	558	475
Kalgoorlie	191	25	....	88	40,918	36,008	....	....	At 1·53 per 1,000 Pop.	....	....	At 1·53 per 1,000 Pop.	....	....	....	....	....
St. John of God	54	....	....	*82	21,297	17,464	....	....	....	....	....	....	....	....	....	....	....
	245	25	....	....	62,215	53,472	28,640	177·3	43·8	222	143	43·8	187	8·6	9·4	310	262
Total	558	....	....	80	180,040	144,671	77,651	481	137	621	388	137	528	....	....	868	737

TABLE IIID (*continued*).

Average Efficiency $= \dfrac{144671}{130040} \times 100 = 80$ per cent.

Beds per 1,000 population used at 80 per cent. efficiency $= \dfrac{180040}{365 \times 77{\cdot}6} = 6{\cdot}4$ (contains 12% chronics) $= 5{\cdot}63$ acute $+ {\cdot}77$ chronics.

Beds per 1,000 population required at 100 per cent. efficiency $= 5{\cdot}63 \times \dfrac{80}{100} = 4{\cdot}5$ acute $+ {\cdot}77$ chronic.

Chronic Beds = ·77 per 1,000 population (at present in hospital).
+·63 per 1,000 population (as indicated by G.Ps.).
+·54 per 1,000 population (twice rural requirements indicated by G.Ps.).
1·94

Desired Level Acute = 5·63 + ·56 (10 per cent. turnover) = 6·19 or 6·2

Desired Level Acute + Chronic = 6·19 + 1·94 or 6·2 + 1·9 = 8·1

Critical Level Acute = 4·5 + ·45 (10 per cent. turnover) = 4·95

Critical Level Acute + Chronic = 4·95 + 1·94 or 5 + 1·9 = 6·9

Kalgoorlie Chronic Beds = ·77
+·63
+·13 per 1,000 population (half rural area requirements *re* G.Ps.).
1·53

Desired Level Acute (inc. 10% turnover) = 6·19 or 6·2

Desired Level Acute + Chronic = 6·19 + 1·53 = 7·7

Critical Level Acute (inc. 10% turnover) = 4·95

Critical Level Acute + Chronic = 4·95 + 1·53 = 6·48

TABLE IIIE.

RURAL HOSPITALS—TWO/THREE DOCTOR.

Hospital.	Ward Beds.	Verandah Beds.		Efficiency.	Bed Days.	Efficiency Bed Days.	Population.	Beds Required at 4·2 per 1,000 Population or 73 per cent. Efficiency.	Beds Required for Chronic at ·3 per 1,000 Population.	Total Beds Desired Acute and Chronic.	Beds Required at 3·1 per 1,000 Population of 100 per cent. Efficiency.	Beds Required for Chronic at ·3 per 1,000 Population.	Total Beds Critical, Acute and Chronic.	Beds Available per 1,000 Population.		Beds Acute and Chronic Required in 1960.	
		Enclosed.	Open.											Ward.	Ward plus Enclosed Verandah.	Desired.	Critical.
Merredin	24	....	15	86	8,690	7,473	6,862	29	2	31	21·4	2	24	3·5	3·5	44	33
Dwellingup	9	6	....	70	5,036	3,525	2,300	9·7	·7	11	7·1	·7	8	3·9	6·5	15	11
Bridgetown	14	....	8	95	4,311	4,095	4,373	18·5	1·3	20	13·6	1·3	15	3·4	3·4	28	21
Manjimup	17	4	2	93	4,352	4,047	4,328	18·1	1·3	20	13·3	1·3	15	3·9	4·8	28	21
Busselton	28	2	10	60	9,117	5,470	4,356	18·4	1·3	20	13·5	1·3	15	6·4	6·9	28	21
Katanning	40	....	4	68	9,273	6,306	5,207	21·8	1·6	24	16·1	1·6	18	7·7	7·7	33	25
Total	132	12	39	73	40,779	30,916	27,426	116	8	126	85	8	95	....	....	176	132

Average Efficiency $= \dfrac{30916 \times 100}{40779} = 73$ per cent .

Beds per 1,000 population used at 73 per cent. efficiency $= \dfrac{40779}{365 \times 27{\cdot}4} = 4{\cdot}08$ conts. 7 per cent. chronic $= 3{\cdot}8$ acute $+ {\cdot}28$ chronic.

Beds per 1,000 population required at 100 per cent. efficiency $= 3{\cdot}8 \times \dfrac{73}{100} = 2{\cdot}8$ acute $+ {\cdot}28$ chronic.

Desired Level Acute = 3·8 + ·38 (10 per cent. turnover) = 4·18 or 4·2
Desired Level Acute and Chronic = 4·18+ ·28 or 4·2 + ·3 = 4·5
Critical Level Acute = 2·8 + ·28 (including turnover or 2·8 + ·28 = 3·08
Critical Level Acute and Chronic = 3·1 + ·3 = 3·4

TABLE IIIF.

RURAL HOSPITALS—ONE DOCTOR.

Hospital.	Ward Beds.	Verandah Beds.		Efficiency.	Bed Days.	Efficiency Bed Days.	Population.	Beds Required at 4 per 1,000 Population of 66 per cent. Efficiency.	Beds Required for Chronics at ·3 per 1,000 Population.	Total Beds Desired Acute and Chronic.	Beds Required at 2·6 per 1,000 Population or 100 per cent. Efficiency.	Beds Required for Chronic at ·3 per 1,000 Population.	Total Beds Critical Acute and Chronic.	Beds Available per 1,000 Population.		Total Beds 1960 (including 40 per cent. Population increase).	
		Enclosed.	Open.											Ward.	Ward and Enclosed Verandah.	Desired.	Critical.
Northampton	10	4	....	73	1,427	1,042	1,469	5·87	·44	7	3·81	·44	5	6·8	9·5	8·8	5·9
Mullewa	21	....	5	*67	3,515	2,334	1,931	7·72	·57	9	5·02	·57	6	10·8	10·8	11·6	7·8
Morawa	7	6	6	54	2,389	1,290	2,015	8·06	·60	9	5·23	·60	6	3·4	6·4	12·1	8·1
Three Springs	18	....	2	*67	4,059	2,720	2,628	10·51	·78	12	6·83	·78	8	6·8	6·8	15·8	10·6
Moora	14	1	....	*67	2,495	1,672	4,612	18·44	1·38	20	11·99	1·38	14	3·03	3·2	27·7	18·7
Wongan Hills	12	3	5	70	2,709	1,896	1,713	6·85	·51	8	4·45	·51	5	7·00	8·7	10·3	6·9
Goomalling	9	2	2	48	1,987	954	2,323	9·29	·69	10	6·03	·69	7	3·8	4·7	13·9	9·4
Wyalkatchem	10	....	5	69	2,891	1,995	2,800	11·20	·84	13	7·28	·84	9	3·5	3·5	16·8	11·3
Dalwallinu	14	....	3	64	3,644	2,232	2,110	8·44	·63	10	5·48	·63	7	6·6	6·6	12·6	8·5
Cunderdin	13	....	4	71	4,789	3,400	2,736	10·94	·82	12	7·11	·82	8	4·7	4·7	16·4	11·1
Kununoppin	10	2	....	64	2,919	1,868	850	3·40	·25	4	2·21	·25	3	11·7	14·1	5·1	3·4
Kellerberrin	20	8	....	72	7,347	5,290	2,340	9·36	·70	11	6·08	·70	7	8·5	11·9	14·0	9·4
York	20	....	1	62	3,869	2,409	2,695	10·78	·80	12	7·00	·80	8	7·4	7·4	16·2	10·9
Beverley	11	....	....	55	2,798	1,539	1,708	6·83	·51	8	4·44	·51	5	6·4	6·4	10·2	6·9
Quairading	11	....	....	*67	2,350	1,574	1,491	5·96	·44	7	3·87	·44	5	7·3	7·3	8·9	6·0
Bruce Rock	13	3	1	69	3,768	2,600	1,900	7·60	·57	9	4·94	·57	6	6·8	8·4	11·4	7·7
Narembeen	9	....	....	76	812	617	977	3·90	·29	5	2·54	·29	3	9·2	9·2	5·8	3·9
Kondinin	11	....	4	79	2,218	1,752	1,050	6·20	·31	7	2·73	·31	4	10·4	10·4	9·1	4·2
Corrigin	11	4	....	60	2,884	1,730	1,467	5·86	·44	7	3·81	·44	5	7·4	10·2	8·8	5·9
Pingelly	14	1	....	62	2,414	1,497	1,663	6·65	·49	8	4·32	·49	5	8·4	9·0	9·9	6·7
Brookton	13	....	1	56	2,099	1,175	960	3·84	·28	5	2·49	·28	3	13·5	13·5	5·7	3·8
Wickepin	9	1	....	56	1,534	859	1,210	4·84	·36	6	3·14	·36	4	7·4	8·2	7·2	4·9
Williams	12	....	2	*67	561	376	991	3·96	·29	5	2·57	·29	3	12·1	12·1	5·9	4·0
Pinjarra	15	3	1	73	4,719	3,445	3,390	13·56	1·01	15	8·81	1·01	10	4·4	5·3	20·3	13·7
Yarloop	30	7	6	57	4,352	2,480	2,195	8·78	·65	10	5·70	·65	7	13·6	16·8	13·2	8·8
Harvey	12	4	....	77	3,789	2,918	4,000	16·00	1·20	18	10·40	1·20	12	3·0	4·0	24·0	16·2
Mornington	6	....	1	*67	108	72	500	2·00	·15	3	1·30	·15	2	12·0	12·0	3·0	2·0
Donnybrook	5	3	3	73	1,674	1,222	2,350	9·40	·70	11	6·11	·70	7	2·1	3·4	14·1	9·5
Boyup Brook	9	....	2	*67	1,805	1,209	1,889	7·55	·56	9	4·91	·56	6	4·7	4·7	11·3	7·6
Pemberton	11	....	5	*67	2,468	1,653	2,000	8·00	·60	9	5·20	·60	6	5·5	....	12·0	8·1
Nannup	10	....	3	*67	1,938	1,304	1,151	4·60	·34	5	2·99	·34	4	8·6	....	6·9	4·6
Margaret River	17	3	2	86	4,360	3,750	2,500	10·00	·75	11	6·50	·75	8	6·8	8·0	15·0	10·1
Denmark	9	....	3	72	2,294	1,652	1,488	5·95	·44	7	3·86	·44	5	6·04	....	8·9	6·0
Mt. Barker	8	....	2	76	2,657	2,019	2,475	8·90	·74	10	6·43	·74	8	3·2	....	13·4	10·0

Kojonup	11	4	....	58	2,018	1,170	1,668	6·67	·50	8	4·33	·50	5	6·5	8·9	10·0	6·7
Tambellup	14	....	....	*67	248	166	901	3·60	·27	4	2·34	·27	3	15·5	....	5·4	3·6
Gnowangerup	19	....	....	*67	2,882	1,930	1,596	6·38	·47	7	4·14	·47	5	11·9	....	9·5	6·4
Wagin	18	....	2	69	3,872	2,671	2,855	11·42	·85	13	7·42	·85	9	6·3	....	17·1	11·5
Lake Grace	8	8	3	*67	3,340	2,237	2,113	8·45	·63	10	5·49	·63	7	3·7	7·5	12·7	8·5
Southern Cross*	21	....	....	63	4,644	2,926	1,974	7·89	·59	9	5·13	·59	6	10·6	....	11·8	8·0
Norseman	35	....	....	47	5,525	2,597	3,200	12·80	·96	14	8·32	·96	10	10·9	....	19·2	12·9
Esperance	13	4	4	56	2,626	1,471	1,051	4·20	·31	5	2·73	·31	4	12·3	16·1	6·3	4·2
Mt. Magnet	13	....	1	*67	2,181	1,461	1,698	6·79	·50	8	4·41	·50	5	7·6	....	10·2	6·8
Cue	17	....	....	*67	1,479	991	1,354	5·41	·40	6	3·52	·40	4	12·5	....	8·1	5·4
Big Bell	16	....	2	68	3,290	2,237	1,354	5·41	·40	6	3·52	·40	4	11·8	....	8·1	5·4
Laverton	9	....	....	*67	149	100	337	....	....	....	....	....	....	26·7	....	....	....
Leonora	26	2	....	*67	3,483	2,334	1,560	6·24	·46	7	4·05	·46	5	16·6	17·9	9·3	6·3
Meekatharra	14	....	1	75	2,050	1,538	1,069	4·27	·32	5	2·77	·32	4	13·09	....	6·4	4·3
Wiluna	30	....	....	*67	423	283	1,170	4·68	·35	6	3·04	·35	4	25·6	....	7·0	4·7
Carnarvon	19	3	7	72	2,661	1,916	2,369	9·47	·71	11	6·15	·71	7	8·02	9·3	14·2	9·6
Coolgardie	13	12	2	55	4,154	2,285	2,207	8·82	·66	10	5·73	·66	7	5·8	11·3	13·2	8·9
Dumbleyung	3	....	3	66	....	....	1,284	5·13	·38	6	3·33	·38	4	2·3	....	7·7	5·1
Total	723	88	94	....	140,667	92,858	97,000	....	....	447	....	....	....	....	....	....	....

Desired Level Acute = 3·7 + ·37 (10 per cent. turnover) = 4·07

Desired Level Acute and Chronic = 4·07 + ·27 or = 4 + ·3 = 4·3

Critical Level Acute = 2·4 + ·24 (10 per cent. turnover) = 2·64

Critical Level Acute and Chronic = 2·64 + ·27 or = 2·6 + ·3 = 2·9.

Average Efficiency for Group = $\frac{92858}{140667} \times 100 = 66$ per cent.

Beds per 1,000 population used at 66 per cent. efficiency = $\frac{140667}{365 \times 97}$ = 3·97 conts. 7 per cent. chronics (·27) = 3·7 acute + ·27 chronic.

Beds per 1,000 population required at 100 per cent. efficiency = $3 \cdot 7 \times \frac{66}{100}$ 2·4 acute + ·27 chronic

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Table 4.

BED REQUIREMENTS PER 1,000 POPULATION.

Area.	Population.	General Acute.		Chronic.	Institute.	Mental.
		Desirable.	Critical.			
Metropolitan	324,000	5·56	4·86	2·9	2·05	....
Regional	49,011	6·2	5	1·9	1·14	....
Two/Three Doctor Hospital Rural	27,426	4·2	3·1	·3	....	....
One Doctor Hospital Rural	97,000	4·0	2·6	·3	....	....
Kalgoorlie	28,640	6·2	5	1·53	·48	....
Whole State	526,077	5·3	4·3	2·1	1·4	3·63
U.S.A.	....	5		2	?	5
U.K.	....	5		2·5	?	5
N.S.W.	....	5·67		?	?	?

Table 5.

HOSPITAL BED REQUIREMENTS (GENERAL CASES), WESTERN AUSTRALIA.

A Survey of Age Groups Showing Total Bed Days in Sexes, and Beds Occupied and Per Cent. in Age Groups of Total Occupancy for Year 1949.

Age Group.	Kalgoorlie.					Geraldton.				
	Male.	Female.	Total.	Daily Beds Occupied	Per cent. of Total.	Male.	Female.	Total.	Daily Beds Occupied	Per cent. of Total.
0–13 years	4,392	4,196	8,588	23·5	22·9	2,277	1,789	4,066	11·1	24·4
14–64 years	10,984	9,506	20,490	56·1	54·5	5,045	3,792	8,837	24·2	53·2
65 years and over	5,443	3,068	8,511	23·3	22·6	2,313	1,411	3,724	10·2	22·4

Age Group.	Northam.					Collie.				
	Male.	Female.	Total.	Daily Beds Occupied	Per cent. of Total.	Male.	Female.	Total.	Daily Beds Occupied	Per cent. of Total.
0–13 years	1,857	1,879	3,736	10·2	20·3	1,357	600	1,957	5·3	13·4
14–64 years	5,462	5,383	10,845	29·7	58·9	4,537	5,509	10,046	27·5	68·9
65 years and over	1,870	1,969	3,839	10·5	20·8	1,473	1,092	2,565	7·0	17·7

Age Group.	Bunbury.					Albany.				
	Male.	Female.	Total.	Daily Beds Occupied	Per cent. of Total.	Male.	Female.	Total.	Daily Beds Occupied	Per cent. of Total.
0–13 years	1,059	608	1,667	4·5	14·1	863	768	1,631	4·5	10·5
14–64 years	4,117	2,856	6,973	19·1	59·2	5,614	3,816	9,430	25·8	60·9
65 years and over	2,036	1,096	3,132	8·6	26·7	2,057	2,349	4,406	12·0	28·6

Table 6.

COMPARATIVE TABLE OF BED REQUIREMENTS THROUGHOUT THE STATE.

Area.	Population.	Beds Available.	Beds Desired.	Surplus or Deficiency.	Beds Available per 1,000 Pop.	Beds Desired per 1,000 Pop.
Metropolitan	324,000	2,235	2,740	—505	6·9	8·46
Regional	77,651	639	621	+ 18	8·2	8·1
Two Doctor Towns	27,426	144	126	+ 18	5·2	4·5
One Doctor Towns	97,000	811	447	+364	8·3	4·3
Total	526,077	3,829	3,934	—105	7·2	7·4

The above Table is for General Acute and Chronic cases and excludes Tuberculosis, Mental and Maternity patients.

TABLE VII.

GENERAL CHRONIC AND INSTITUTE BEDS IN METROPOLITAN AREA.

Convalescent Hospitals.

Alfred Carson	20
Bethel	12
Brentwood	11
Cairngorm (Darlington)	5
Faversham	11
Grosvenor	17
Harrow	12
M.L.C. Home	37
St. John's Convalescent Home, Mosman Park	11
St. Anne's	8
	144

General Private Hospitals.

Avro	28
Beaufort	11
Bethseda	14
Hawthorn	12
Lucknow	16
Mount	75
Sa-Borne	13
St. Anne's	18
St. Andrew's	8
St. Helen's	9
St. John of God, Belmont	28
St. John of God, Subiaco	270
St. Omer	28
Tresillian	13
Westminster	23
	566

Public Hospitals.

Royal Perth Hospital	504
Princess Margaret Hospital	254
Fremantle	181
Jarrahdale	9
Armadale	2
	950

Public Hospitals	950
Private Hospitals	566
Private Convalescent Hospitals	144
	1,660
Repatriation	267
	1,927

Chronic Beds.

Sunset	107
Mt. Henry	80
Home of Peace	81
Carinya	40
	308

Sunset	343	Government
Mt. Henry	73	
Woodbridge	50	
Little Sisters of Poor	178	
San Michele	4	
Undercliffe	18	
Ladies' Eventide Home	36	
Prospect Rest Home	8	
The Haven	18	
Casson House	59	
Stanhope	7	
Leighton Rest Home	8	
The Gables	22	
St. Margaret's	28	
Sister Graham	4	
St. Enulies	6	
Hardy Lodge	12	
Crystal Brick	20	
Graceville Home	19	
Mrs. Stevenson	4	
L. G. Holman	16	
	933	

Table VIII.

Age.	Chronic.		Institution.	
	Male.	Female.	Male.	Female.
0— 4	11	6	....	....
5— 9	17	8	....	....
10—14	9	5	....	....
	37	19	....	....
15—19	5	4	....	....
20—24	14	3	....	....
25—29	9	5	....	....
30—34	3	7	....	....
35—39	9	12	....	....
40—44	6	6	....	....
45—49	12	12	3	2
50—54	14	10	6	1
55—59	20	12	3	1
	92	71	....	....
60—64	29	20	24	9
65—69	20	27	31	8
70—74	40	37	62	20
75—79	42	44	73	35
80—84	49	52	64	35
85—89	27	21	21	21
90+	10	15	3	13
	217	216	....	....
Total	346	306	290	145
				1,087

Table IXa.

0—14 CHRONIC AND LONG-STAY CASES.

	Male.	Female.	Total.
Bone and Joints—			
Osteomyelitis	2	2	4
Perthes'	2	1	3
T.B. Spine	1	3	4
Deformities—			
Talipes	4	1	5
Others	5	1	6
Post Poliomyelitis	13	2	15
Rheumatic Fever	2	5	7
Purpura	1	....	1
Nephritis	2	2	4
T.B. Peritonitis	1	....	1
Coeliac Disease	2	....	2
Bronchiectasis	....	1	1
Parkinson's	....	1	1
Skin Diseases	1	1	2
	36	20	56

TABLE IXb.

15—59 CHRONIC AND LONG-STAY CASES.

	Male.	Female.	Total.
Myeloid Leukaemia	....	1	1
Cardiac	3	3	6
Para and Hemiplegias	13	6	19
Hypertension	1	....	1
Varicose Ulcers	1	....	1
Rheumatic Fever and seq.	1	....	1
Rheumatoid Arthritis	2	5	7
Arthritis....	2	3	5
Fractured Femur	15	4	19
Other Fractures	6	2	8
Pagets Disease	1	....	1
Malignant	3	2	5
Brain Tumour	1	....	1
Tumour of Cord	2	2	4
Injury to Spine	3	1	4
Disseminated Lebrosis Friedricks Ataxia }	1	3	4
Neuritis	2	....	2
Asthma & Emplysema	3	....	3
Bronchiectasis	....	2	2
Pleural Effusion	1	....	1
Paralysis Agitans and Parkinson's	4	4	8
Muscular Atrophy	2	....	2
Post Poliomyelitis	2	5	7
Spastics	1	4	5
Congenital Defects	2	....	2
Skin Diseases	2	....	2
Infected Urinary Tract	1	....	1
	75	47	122

TABLE IXc.

MAIN DISEASES IN CHRONICS 60—90+.

	Male.	Female.	Total.
Cardiac	42	30	72
Para and Hemiplegia	29	27	56
Hypertension	2	1	3
Malignant	14	19	33
Fractured Femur	5	10	15
Arthritis....	10	8	18
Rheumatoid Arthritis	7	7	14
Prostatic Enlargement	14	....	14
Senility	14	39	53

TABLE IXd.

CASES FOR INSTITUTIONAL CARE BETWEEN 15—59.

	Male.	Female.	Total.
Cardiac	2	1	3
Hypertension	....	1	1
Para and Hemiplegia	3	....	3
Asthma	1	....	1
Chronic Bronchitis and Emphysema	1	....	1
Senility	....	1	1
Fractures	....	1	1
Peptic Ulcer	1	....	1
Deformity	1	....	1
Dermititis	1	....	1
Brain Tumour	2	....	2
	12	4	16

Table IXe.

CHIEF GROUPS OF CASES FOR INSTITUTIONAL CARE 60—90+.

	Male.	Female.	Total.
Cardiac	64	12	76
Hypertension	20	4	24
Para and Hemplegia	17	7	24
Asthma, Chronic Bronchitis and Emphysema	18	5	23
Arthritis	20	7	27
Fractured Femur	1	4	5
Senility	41	86	127
Arterio-sclerosis	39	....	39

Table X.

DIABETES AND EPILEPSY IN AGE AND SEX GROUPS.

Age.	Diabetes.		Epilepsy.	
	Male.	Female.	Male.	Female.
0—14	....	....	....	....
15—59	....	1	6	2
60—90+	6	6	4	2
Total	6	7	10	4

Table XI.

MENTAL CASES IN HOSPITALS AND INSTITUTIONS OTHER THAN MENTAL HOSPITALS AND INSTITUTIONS.

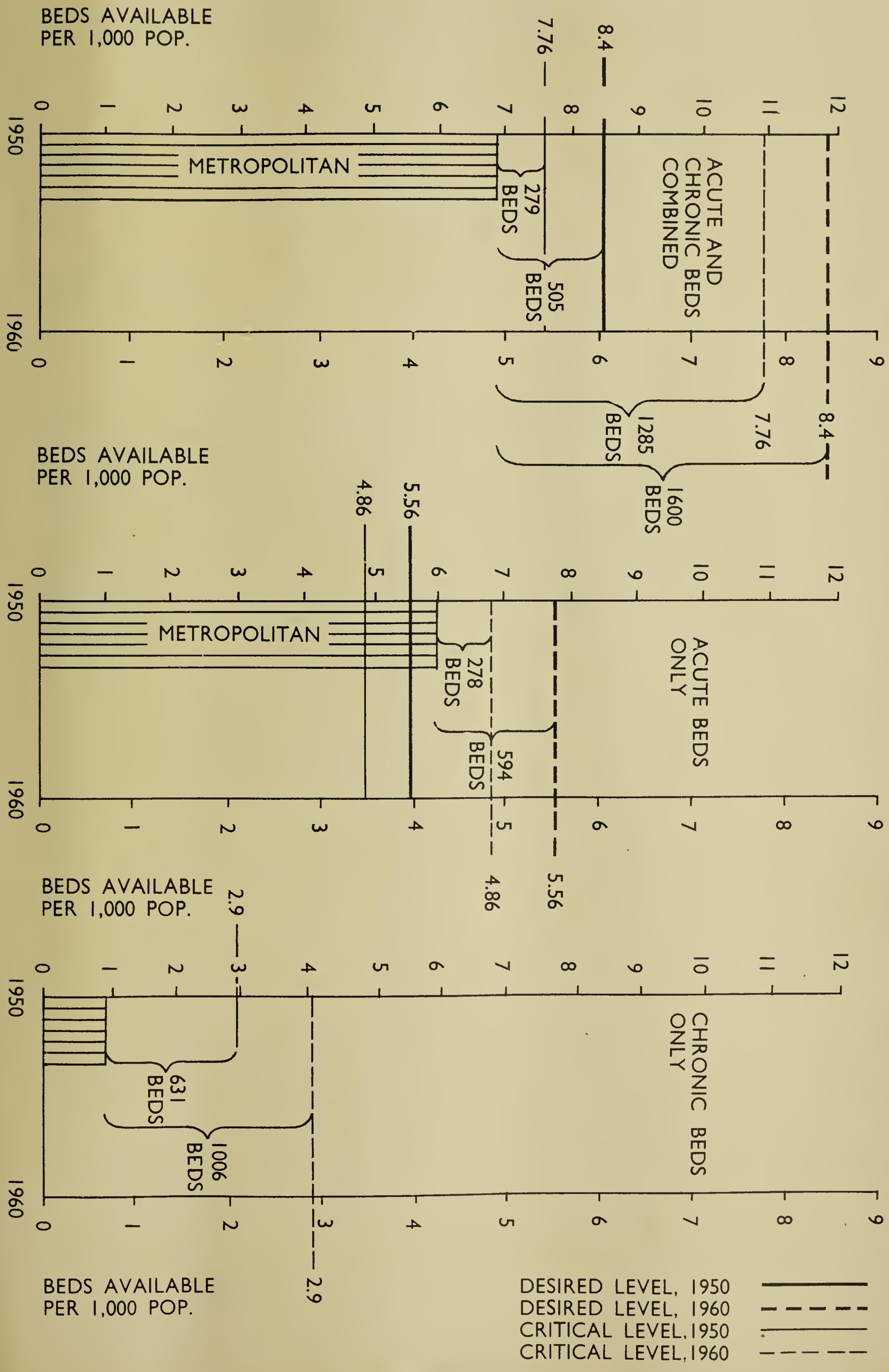
Age.	Mental II.		Mental III.		Total.
	Male.	Female.	Male.	Female.	
0—14	....	....	....	....	....
15—59	6	16	4	8	34
60—90+	17	30	32	23	102
Total	23	46	36	31	136

Mental II.—Abnormal but requires no supervision except for guidance in financial and domestic affairs and normal daily problems.

Mental III.—Abnormal and requires constant supervision because of mental condition.

HOSPITAL BED REQUIREMENTS

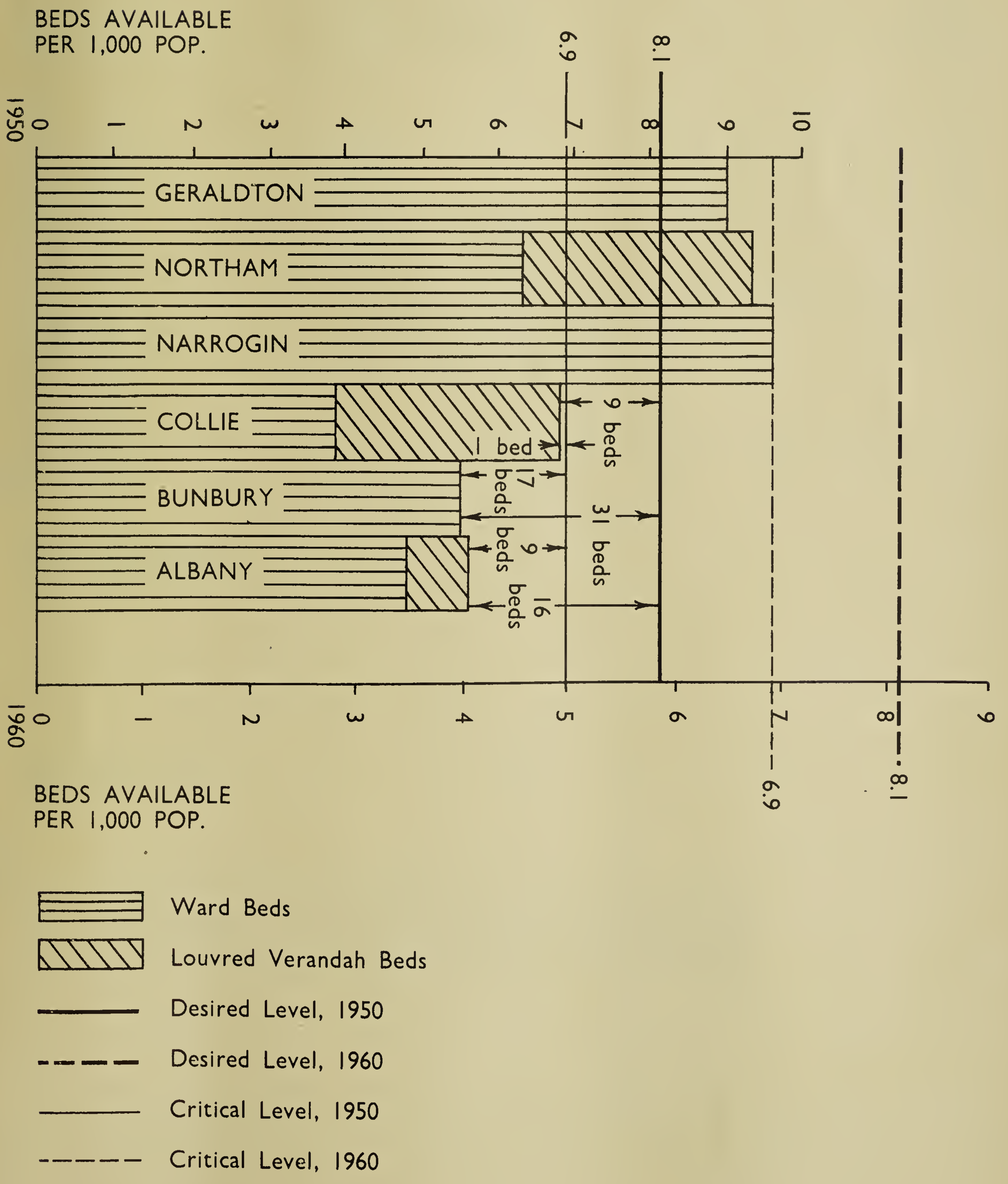
METROPOLITAN HOSPITALS



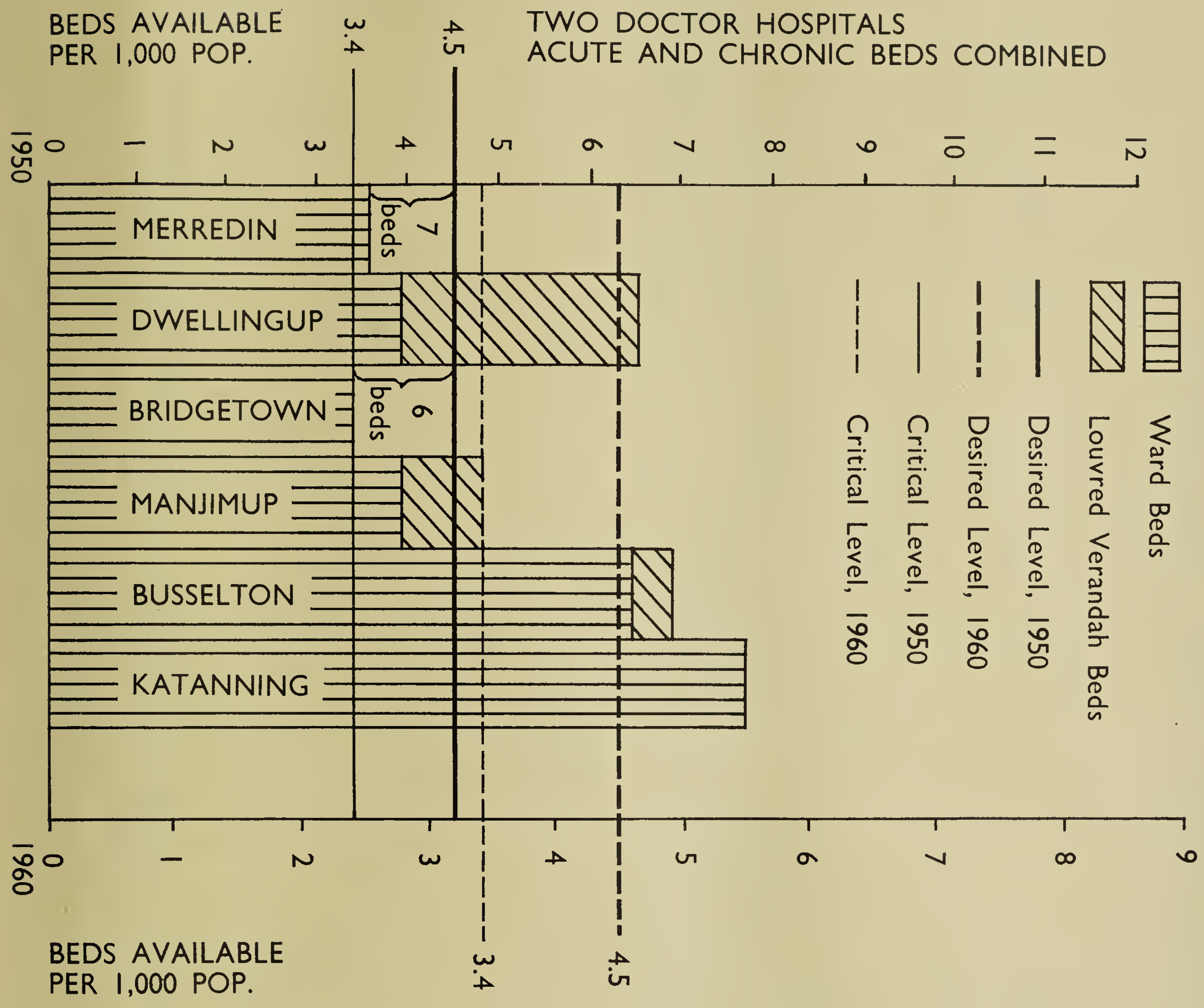
HOSPITAL BED REQUIREMENTS

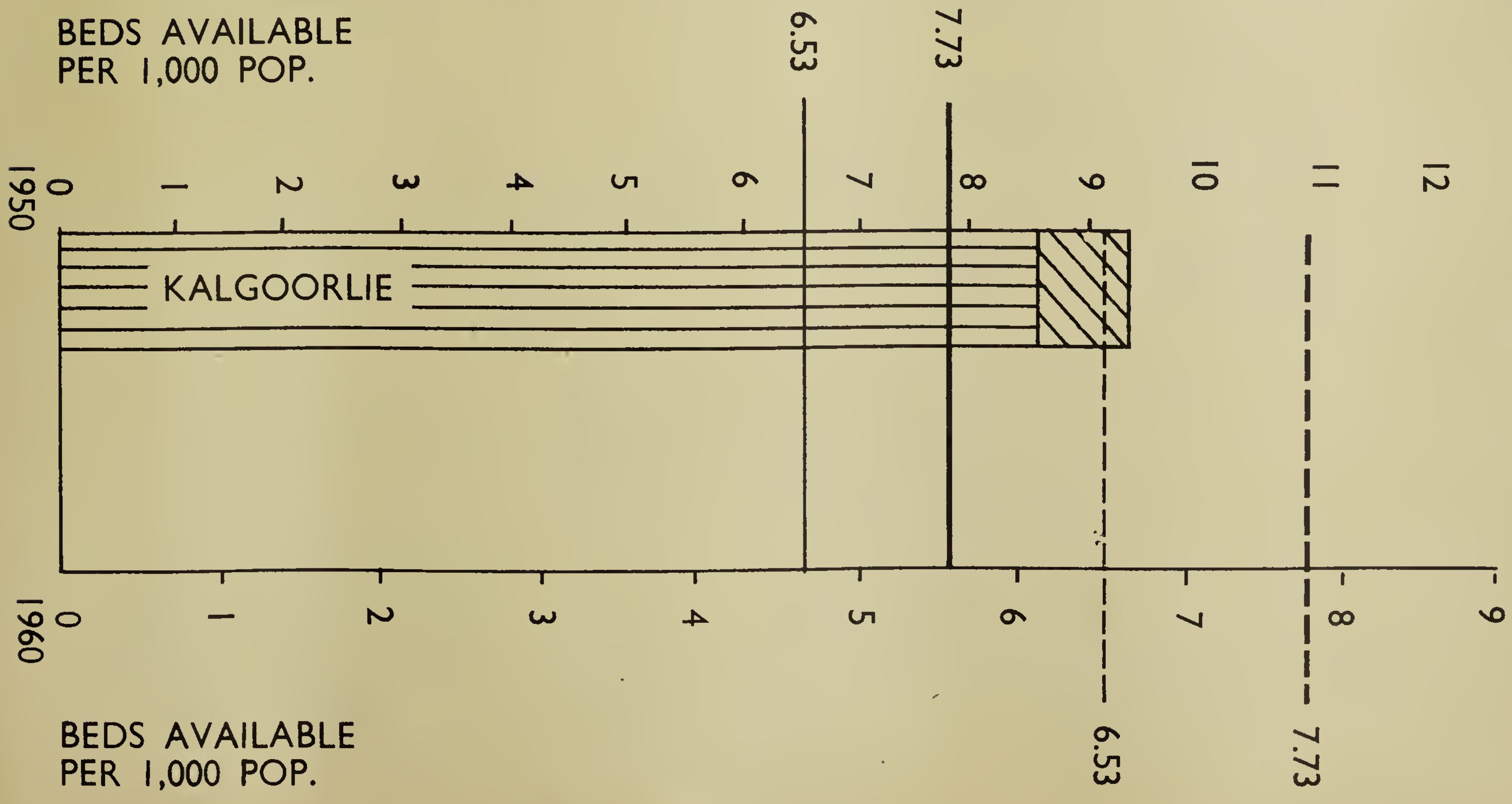
POTENTIAL REGIONAL HOSPITALS

ACUTE AND CHRONIC BEDS COMBINED

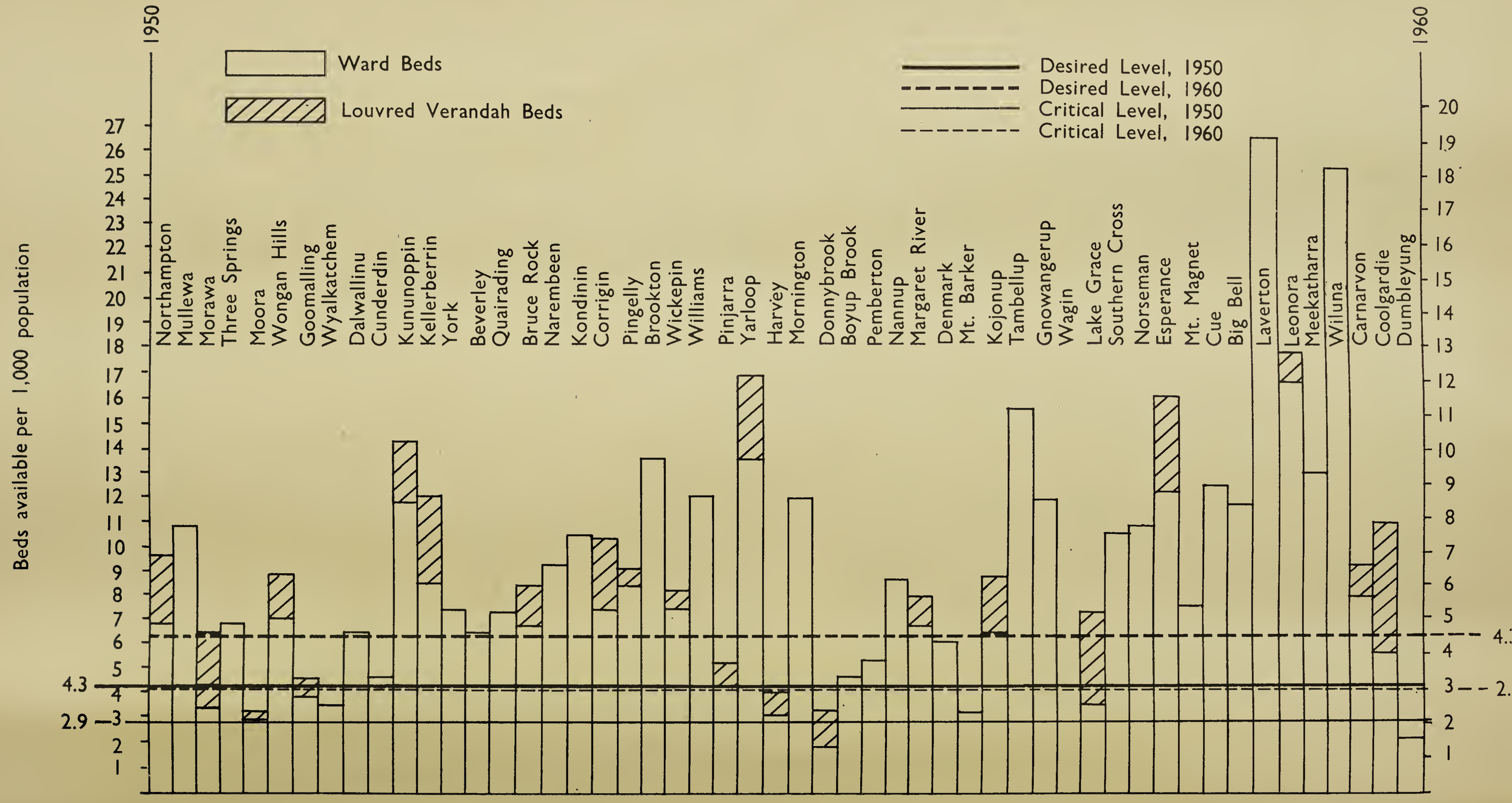


HOSPITAL BED REQUIREMENTS





HOSPITAL BED REQUIREMENTS



Appendix 1a.

MINOR HOSPITALS.

NAME OF HOSPITAL..

PERIOD COVERED BY REPORT—1st JANUARY, 1949, to 31st DECEMBER, 1949.

NO. OF DOCTORS REGULARLY ATTENDING CASES IN THE HOSPITAL................

Disease or Operation.	No. of Cases.	Total Number of Days in Hospital.*	Average Number of Days per Case.
Pneumonia			
(A) Enteritis			
Tonsilitis			
(B) Influenza			
(C) Currettage (D and C)			
(D) Herniorrophy			
(E) Appendicectomy			
Tonsilectomy (adults over 16)			
Total			

* Add together the number of days each patient with the disease spends in hospital and put total in column 2.

† Column 3 = $\dfrac{\text{Column 2}}{\text{Column 1}}$

(A) Enteritis includes colitis, gastro enteritis, diarrhoea and bacillary dysentery but not amoebic dysentery.

(B) Influenza includes common cold and upper respiratory tract infections, excluding tonsilitis.

(C), (D), (E) Where the operation is complicated by other major operational procedures the case should not be recorded.

NOTE.—Apart from the above note (C), (D), (E), all cases in the categorics required must be recorded with their full number of days in hospital. Any deletion or alteration that is not in accordance with fact will negative the utility of the investigation.

Appendix 1b.

MAJOR HOSPITALS.

NAME OF HOSPITAL..

PERIOD COVERED BY REPORT—1st JANUARY, 1949 to 31st DECEMBER, 1949.

I.

Disease or Operation.	No. of Cases.	Total Number of Days in Hospital.*	Average Number of Days per Case. †
Varicose Ulcers			
Pneumonia			
Pyelitis			
Cholecystitis			
Prostatectomy			
Cholecystectomy			
Partial Gastrectomy			
Fothergill with Perineorrhaphy			
Total			

* Add together the number of days each patient with the disease spends in hospital and put total in column 2.

† Column 3 = $\dfrac{\text{Column 2}}{\text{Column 1}}$

II. Total number of patients admitted to hospital (all diseases, not only those in I.)................................

Total number of patients admitted as Tonsilitis (not for Tonsillectomy) and as Influenza (including upper respiratory tract infections and common colds)...

Appendix 1c.

CHILDREN'S HOSPITALS.

NAME OF HOSPITAL..

PERIOD COVERED BY REPORT—1st JANUARY, 1949, to 31st DECEMBER, 1949.

I.

Disease or Operation.	No. of Cases.	Total Number of Days in Hospital.*	Average Number of Days per Case.†
Pneumonia			
(A) Enteritis			
Tonsilitis			
(B) Influenza			
(C) Harelip Operation			
(D) Herniorrophy			
(E) Appendicectomy			
Tonsilectomy			
Total			

* Add together the number of days each patient with the disease spends in hospital and put total in column 2.

$$\dagger \text{ Column 3} = \frac{\text{Column 2}}{\text{Column 1}}$$

(A) Enteritis includes colitis, gastro enteritis, diarrhoea and bacillary dysentery but not amoebic dysentery.

(B) Influenza includes common cold and upper respiratory tract infections, excluding tonsilitis.

(C) Does not include repair of cleft palate.

(D), (E) Where the operation is complicated by other major operational procedures the case should not be recorded.

NOTE.—Apart from the above note (C), (D), (E) all cases in the categories required must be recorded with their full number of days in hospital. Any deletion or alteration that is not in accordance with fact will negative the utility of the investigation.

II. Total number of patients admitted to hospital (all diseases, not only those in I.)...............................

Total number of patients admitted as Tonsilitis (not for Tonsillectomy) and as Influenza (including upper respiratory tract infections and common colds)..

III. Wastage in turnover.
i.e., average number of beds, shown as percentage of total possible, that remain empty between discharge of patients and admission of new patients. This refers only to general hospital beds after deduction of special beds reserved for staff use, emergency, infective or private cases...........

Appendix 2a.

HOSPITALS AND BOARDING HOUSES.

A. Name of Hospital..

B. Total number of beds occupied in Hospital. All cases, excluding only Maternity and Infectious Diseases....................

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Serial No. of Patient.	Sex.	Age.	Disease.	Ambulatory or Bedfast.	Continent or Incontinent Urine.	Continent or Incontinent Faeces.	Require Medical Attention D.W.M.	Require Skilled Nursing D.W.M.	Require only Semi-skilled Nursing.	Mental Picture—1, 2, 3.	Reason for Hospitalisation.

Appendix 2b.

MEDICAL PRACTITIONERS.

A. Name or Doctor of Designation of Group of Doctors..

B. Estimated Total Population in the Practice..

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Serial No. of Patient.	Sex.	Age.	Disease.	Ambulatory or Bedfast.	Continent or Incontinent Urine.	Continent or Incontinent Faeces.	Requires Medical Attention D.W.M.	Requires Skilled Nursing D.W.M.	Requires only Semi-skilled Nursing.	Mental Picture—1, 2, 3.	Reasons for Hospital or Institutional Admission.	Reason why so far not admitted.	Estimated No. of Days per annum required to be in Hospital or Institution.

Appendix 3.

TALK GIVEN AT THE ANNUAL MEETING OF THE SILVER CHAIN DISTRICT & BUSH NURSING ASSOCIATION ON 26th SEPTEMBER, 1951.

DOMICILIARY NURSING AND HOSPITAL ECONOMY.

I am sure you are all aware of our extreme shortage of hospital beds. At present in General Hospital Beds acute and chronic and in Mental Hospital beds we are about 1,200 short of our needs. By 1960 we will be nearly 3,000 short. There are not at present the men, the money and the material to build all these beds or to build them fast enough. We must, therefore, make use of every serviceable expedient that will help to get us over the critical years until such hospitals are built.

Among these expedients is one suggested some months ago by our Minister. Namely, that a domiciliary nursing service with the auxiliary assistance of a Domestic Help Service be instituted to endeavour to provide adequate care in their own homes for a number of sick who at present occupy hospital beds. The Minister further suggested that large houses should be purchased strategically situated throughout the metropolitan area to act as homes and centres for this domiciliary service and in addition to provide a certain number of convalescent or chronic sick beds to assist the domiciliary service.

This scheme of the Minister for Health is not exploratory or experimental. It is devised on sound principles and has been in existence in the United Kingdom for many years in one form or another and has indisputably proved its worth.

Let us consider briefly its evolution in Great Britain. For many years voluntary bodies carried on a domiciliary service similar to our Silver Chain. In addition Local Authorities provided domiciliary nursing for certain types of cases and private nursing homes maintained not only an indoor staff of nurses but an outdoor one as well who did domiciliary nursing and thereby increased the bed capacity of the Nursing Home many fold.

On the appointed day when the 1946 National Health Service Act came into force Local Authorities were ordered to provide a Domiciliary Nursing Service and Home Help Service for all types of cases in their areas and they were enjoined by the Act to do so in consultation with and by arrangement with existing voluntary organisations. The result was that in the majority of cases these voluntary organisations agreed to expand their services in domiciliary nursing to provide such care wherever it was needed for all types of cases and the Local Authority provided extra accommodation and the major portion of the cost of the scheme. The Local Authority in return obtained some directing control of the Service but the day to day administration was left in the hands of the voluntary bodies.

In the three years that this extended service has been running it has met with nothing but praise. Every commentator has remarked on the enormous saving in hospital beds it has achieved and at a cost far lower than hospital beds entail. The Chief Medical Officer of the Department of Health for Scotland has said that to treat a patient in his own home costs £2 per week. To treat him in a hostel costs £3 10s. per week, and in a hospital anything over £8 per week. So the scheme works and it costs far less than any other.

A few words about the Home Help Service. This has not been done by Voluntary bodies but is run entirely by the Local Authorities. The Home Help is employed full time or part time. A roster being maintained for call up of part time Helps when required. They perform most household tasks, cooking, cleaning, shopping, and getting the children off to school, etc. They do not do heavy washing but a laundry contract is arranged at Local Authority cost for people who cannot afford a laundry. Similarly it is, in certain areas, considered uneconomical for Home Helps to cook separate meals in individual homes and a central kitchen provides meals which are distributed round the district. This " meals on wheels " idea is used extensively in the United Kingdom and is a development of Twentieth Century methods to meet Twentieth Century problems. A Home Help Service greatly increases the efficiency of a Domiciliary Nursing Service as far as hospital bed saving is concerned.

Now let us see how far we have got in this State.

For some time an experimental domiciliary service has been run in Fremantle by the Silver Chain in collaboration with the Fremantle Hospital.

By careful consideration of the cases visited by the nurses in this Service it has been calculated that the Service saves the hospital 12 beds, i.e., 6% of its 200 beds. In freeing these 12 beds, the Silver Chain has averaged about 800 visits a month at a cost to the Government of about £160.

But 12 beds at Fremantle Hospital would have cost the Government over £700. Our figures therefore, agree with the Chief Medical Officer in Scotland that it is more than four times the cost to treat a case in hospital than to provide domiciliary treatment.

If we expand the Fremantle experiment to the whole of the metropolitan area, we can hope by the same means to save 6% of the total 1,800–2,000 general acute beds. That is a saving of over 100 beds. The average length of stay of a patient in a general hospital is about 15 days. That is every bed serves 24 patients a year. So that our hundred odd beds saved by domiciliary nursing will allow 2,500 more patients to be treated in bed in general hospitals per year.

And this can be done by Domiciliary Nursing alone. If we adopt the Minister's scheme in its entirety we should have some six small hospitals totalling let us say 72 beds in addition to domiciliary treatment, and if we have something in the way of a Domestic Help Service we should add further to the efficiency of bed saving. Say, as an arbitrary figure, the Domestic Help adds on 20–30% to the the bed saving ; we then have a total of 200 beds saved—100 from Domiciliary Nursing, 72 in the Auxiliary Hospitals and 28 by virtue of the Domestic Help. Two hundred beds saved means 5,000 more patients treated per year in our general hospitals—a number sufficient to reduce our waiting lists for at least another year and to keep these waiting lists within reasonable limits for the next two or three years ; in other words during those vital years when we are building hospitals.

Is that not worth while ?

Now the cost.

The London County Council serves a population of nearly 3¼ millions.

It employs just over 300 nurses on the domiciliary staff. That is just under one nurse per 10,000 of population.

At that estimate our metropolitan population of just over 300,000 would require 30 Domiciliary Nurses and if we ran 72 beds in six Ancillary hospitals we would need another 30 nurses ; these would receive assistance from the Domiciliary staff. In addition for ancillary hospitals and domiciles we would require about 30 full-time domestic helps and a part-time staff on roster paid when employed. With this we should save 200 beds.

The cost of building a 200 bed hospital is a million pounds and it would cost £400–£500 daily to run.

Don't you think, then, it's worth while, the Silver Chain and the Government getting together on this matter and working out a plan.

Above all, it must be borne in mind that the Minister's scheme is no longer experimental. We are not dealing with theories. We have examined our own and the experience of others and made facts and figures talk and prove the value of the policy.

Great Britain recognising the value of its voluntary domiciliary services went boldly ahead with their expansion under local authorities. The Silver Chain and the Government can do the same.

In your Constitution and Rules adopted in 1941 the following occurs :—

The objects of the Association shall be—

(i) To provide a nursing service amongst the sick, and poor, and by this means to alleviate the conditions of the sick and poor and raise the tone and standard of their homes.

(ii) To provide homes for the old and necessitous.

(iii) To co-operate with organisations having the same or similar objects.

Can you imagine any better opportunity of attaining your objective than co-operation with the Government in putting the Minister's scheme into effect and by so doing helping to tide us over these critical years in hospital construction.

Appendix 4.

S. U. X.

(Index of Suitability of Hospital Accommodation.)

Legend :—

S = Satisfactory.
U = Unsatisafctory.
X = Exceptionally bad.
Date = Year expected to cease being considered satisfactory.

Scale for estimation of Maternity Bed Requirements.

Population.	No. Maternity Beds.
1,000	2
1,500	3
2,250	4
3,000	5
3,750	6

Scale for estimation of Maternity Bed Requirements—*continued.*

Population.	No. Maternity Beds.
4,500	7
5,250	8
6,000	9
6,750	10
7,500	11
8,250	12
9,000	13
9,750	14
10,000—20,000	1.5 per 1,000 population.
20,000—30,000	1.3 per 1,000 population.
30,000+	1.2 per 1,000 population.

Hospital.	Beds.		Operating Theatre.	Casualty and Consulting.	Labour and Delivery.	X-Ray Accommodation.	Dispensary Accommodation.	~~Labour Accommodation.~~	Quarters.			Dining Room.		Sanitary Annexe.		Hot Water System.	Laundry and Drying.	Mortuary Accommodation.
	General.	Maternity.							Nurses.	Maids.	Kitchen.	Nurses.	Maids.	Patients.	Staff.			
Geraldton	1954	1955	X	X	S	S	U	~~X~~	S	S	S	S	U	S	S	S	S	S
Northam	1955	U	S	S	X	S	U	~~X~~	U	U	S	S	S	S	S	S	U	S
Narrogin	1956	U	S	U	....	U	U	~~....~~	U	U	S	U	U	U	S	S	U	S
Collie	....	1955	U	S	1955	....	U	~~S~~	S	S	S	U	1955	S	S	S	U	S
Bunbury	X	U	S	X	....	X	U	~~....~~	U	X	U	S	S	U	1954	S	S	S
Albany	X	S	U	U	....	S	S	~~....~~	U	U	X	S	X	S	S	S	U	S
Kalgoorlie	S	U	U	S	U	S	S	~~S~~	X	S	S	S	S	S	S	S	S	S
Merredin	U	U	S	S	1955	S	1952	~~....~~	S	1955	U	U	U	S	S	U	U	S
Dwellingup	S	S	S	S	S	S	....	~~....~~	S	S	S	S	S	S	S	U	S	U
Bridgetown	X	U	S	X	1952	S	....	~~....~~	U	U	S	U	S	U	X	S	S	S
Manjimup	1952	U	U	X	U	S	....	~~....~~	U	U	U	S	S	U	S	S	S	U
Busselton	S	S	S	1952	1955	S	S	~~....~~	U	S	U	U	U	U	S	S	U	U
Katanning	S	1950	S	S	X	S	....	~~....~~	S	U	S	S	S	U	S	S	U	S
Metropolitan Hospitals	X	X	....	....	....	....	....	~~....~~	....	....	....	....	....	....	....	....	....	....

REMARKS.

Northam—Maternity required, 15 ; available, 13.
Narrogin—12 maternity beds are at present in unsuitable premises converted to a hospital. Proposed alterations to Casualty and X-Ray to commence shortly.
Collie—General beds available, 47 ; beds required Critical Level, 48 ; alterations proposed to Theatre ; No consulting room.
Bunbury—General beds available, 66 ; required Critical Level, 83 ; available Maternity beds, 12 ; required Maternity beds, 15.
Albany—Available General beds, 36 ; Beds required Critical Level, 45.
Kalgoorlie—Excess in General beds. Compensates for deficiency in Maternity by internal re-arrangement.
Merredin—Available General beds, 24 ; required at Critical Level, 24 ; Available Maternity, 7 ; required Maternity, 10.
Bridgetown—Available General beds, 14 ; required at Critical Level, 15 ; Maternity available, 6 ; Maternity required, 7.
Manjimup—Available maternity, 5 ; required Maternity, 7.

CORRIGENDUM

ANNUAL REPORT—DEPARTMENT OF PUBLIC HEALTH

WESTERN AUSTRALIA

Delete the whole of the tabulated information in column 9 (Labour Accommodation) on Pages 80, 81 and 82.

S. U. X.—*continued.*

Hospital.	Beds.		Operating Theatre.	Casualty and Consulting.	Labour and Delivery.	X-Ray Accommodation.	Dispensary Accommodation.	Labour Accommodation.	Quarters.			Dining Room.		Sanitary Annexe.		Hot Water System.	Laundry and Drying.	Mortuary Accommodation.
	General.	Maternity							Nurses.	Maids.	Kitchen.	Nurses.	Maids.	Patients.	Staff.			
Northampton	S	1952	U	U	U	U	....	....	U	U	S	S	U	S	U	X	S	S
Mullewa	S	1954	X	X	1954	X	....	....	X	X	U	U	X	S	S	S	U	X
Morawa	S	U	S	X	U	S	....	....	U	U	S	U	X	S	S	S	U	X
Three Springs	S	1950	....	....	....	....	....	....	Improve	ments un	der way.	....	....	....	....	....	....	....
Moora	U	X	S	S	S	X	S	....	X	X	S	U	U	S	S	S	X	X
Wongan Hills	S	U	X	X	1954	U	....	....	1954	X	1954	U	X	U	S	X	X	S
Goomalling	1953	1950	S	U	S	S	S	S	X	X	S	S	U	S	S	S	S	S
Wyalkatchem	U	U	U	U	S	S	U	S	S	S	S	S	U	U	U	....	S	S
Dalwallinu	S	S	S	S	S	S	....	....	U	U	U	U	U	S	S	X	S	U
Cunderdin	1952	U	1952	S	S	X	....	....	X	X	1952	U	X	U	U	S	U	S
Kununoppin	S	S	S	X	X	X	....	....	S	S	1952	U	X	S	S	X	S	S
Kellerberrin	S	S	U	U	S	U	....	....	U	U	S	S	S	U	S	U	U	S
York	S	S	X	X	S	X	....	....	X	X	X	S	X	S	S	S	S	S
Beverley	S	S	S	X	S	X	....	....	S	X	S	S	S	S	X	S	S	S
Quairading	S	S	S	S	S	S	S	S	S	U	S	S	S	S	S	S	S	S
Bruce Rock	S	S	X	S	U	....	S	....	S	S	S	S	S	S	S	S	S	S
Narembeen	S	1952	U	U	U	U	U	U	U	U	U	U	U	S	S	X	S	S
Kondinin	S	S	S	U	U	U	....	....	U	X	U	X	X	U	X	S	U	U
Corrigin	S	S	S	X	S	S	....	....	S	S	S	S	X	S	S	S	S	X
Pingelly	S	U	S	U	U	S	....	....	S	S	S	U	X	S	S	X	U	S
Brookton	S	S	S	....	....	S	....	....	S	S	U	X	X	U	U	X	U	U
Wickepin	S	U	U	U	S	....	S	S	S	S	S	S	U	S	S	X	S	S
Williams	S	S	X	U	S	U	....	....	U	U	S	S	X	S	S	S	S	S
Pinjarra	1950	U	S	S	U	S	....	....	S	S	S	S	S	S	S	X	S	S
Yarloop	S	S	S	X	S	S	S	....	U	U	S	S	S	S	S	S	U	S
Mornington	S	....	U	S	....	....	....	....	S	S	S	S	X	S	S	X	X	S
Harvey	U	S	S	U	U	1953	....	X	X	X	U	U	S	U	X	S	U	S
Donnybrook	U	S	X	X	1952	S	....	....	U	X	S	U	X	S	S	X	S	X
Boyup Brook	1950	1954	....	....	....	....	....	....	Improve	ments un	der way.	....	....	....	....	....	....	....
Pemberton	1956	1954	S	S	S	S	....	....	U	X	S	S	X	S	S	S	S	S
Nannup	S	S	S	S	U	....	....	....	S	X	S	U	X	S	U	X	S	S
Margaret River	S	S	S	S	S	S	S	....	S	U	U	S	S	S	S	S	U	S
Denmark	S	S	U	U	S	X	....	....	U	S	U	S	X	X	X	X	X	U
Mt. Barker	U	S	S	S	U	....	U	S	U	U	U	S	U	U	U	....	S	S
Tambellup	S	S	S	U	U	U	U	S	S	U	S	S	S	S	S	S	S	S
Gnowangerup	S	U	S	S	S	S	....	....	S	S	S	S	X	S	S	S	U	S
Wagin	S	S	S	S	S	X	X	....	X	X	S	S	S	S	S	S	S	S
Lake Grace	S	S	S	S	S	S	S	....	S	S	S	S	S	S	S	S	S	S
Southern Cross	S	S	S	S	S	S	....	....	S	S	S	S	S	S	S	S	S	S
Norseman	S	S	S	S	S	S	....	....	U	U	S	S	S	S	S	S	S	S
Esperance	S	S	S	U	U	U	U	U	S	S	U	U	U	U	X	X	U	S
Mt. Magnet	S	U	S	S	S	S	S	S	U	U	U	U	U	S	U	X	S	S
Cue	S	U	S	S	S	S	U	U	S	S	S	S	S	S	S	X	S	S

S. U. X.—*continued.*

Hospital.	Beds.		Operating Theatre.	Casualty and Consulting.	Labour and Delivery.	X-Ray Accommodation.	Dispensary Accommodation.	Labour Accommodation.	Quarters.			Dining Room.		Sanitary Annexe.		Hot Water System.	Laundry and Drying.	Mortuary Accommodation.
	General.	Mat.							Nurses.	Maids.	Kitchen.	Nurses.	Maids.	Patients.	Staff.			
Big Bell	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Laverton	S	S	X	S	X	X	....	....	S	X	S	S	X	S	S	X	S	S
Leonora	S	S	S	U	S	S	....	....	S	S	S	S	S	S	S	S	S	S
Meekatharra	S	S	S	S	S	S	....	....	S	X	X	U	X	S	S	S	S	S
Wiluna	S	S	S	S	S	S	S	S	S	S	S	S	X	S	S	S	S	S
Carnarvon	S	U	U	U	U	U	....	....	S	U	U	U	U	U	S	X	X	X
Coolgardie	S	U	U	S	S	U	U	....	X	X	X	U	U	X	X	X	U	S
Dumbleyung	X	S	X	X	S	X	....	....	X	X	S	X	X	S	S	X	U	S

REMARKS.

Morawa—Maternity beds, 2; Maternity beds required, 4.

Three Springs—Maternity beds, 4; required, 5.

Moora—General beds, 15; Critical Level, 14; Maternity beds (average), 4; Maternity beds required, 8.

Wongan Hills—Maternity beds, 2; required, 3.

Goomalling—Maternity beds, 4; required, 5.

Wyalkatchem—General beds, 10; required, 13; Maternity beds, 3; required, 5.

Cunderdin—Maternity beds, 4; required, 5.

Pingelly—Maternity beds, 2; required, 4.

Wickepin—Maternity beds, 2; required, 3.

Pinjarra—New hospital nearly completed.

Harvey—General beds available, 16; Critical Level, 12.

Donnybrook—General beds, 8; Critical Level, 7.

Mt. Barker—General beds, 8; Critical Level, 8.

Denmark—General condition of hospital unsatisfactory.

Lake Grace—Old building entirely inadequate; new hospital soon to be opened; S U X applies to this new hospital.

Mt. Magnet—Surplus in General beds; compensates for Maternity deficit.

Cue—Surplus in General beds; compensates for Maternity deficit.

Carnarvon—Maternity beds, 4; required, 5. General condition of hospital very unsatisfactory.

Coolgardie—Surplus in General beds; compensates for Maternity deficit.

Dumbleyung—General beds, 3; Critical Level, 4; compensated by proximity to Wagin.

Appendix 5.

RED CROSS BLOOD TRANSFUSION SERVICE.

Present Position.

Premises inadequate to maintain service for State because of—

1. Increased usage of blood and serum in Medical and Surgical Practice.
2. The more selective use of blood, serum and their products.

   e.g., Rh -ve blood, packed cells, immune sera, fractionated serum globulins. All of which require extra laboratory and manufacturing technique.
3. The growing population.
4. The need for organising and stocking up for a National Emergency.
5. Both premises in use are makeshift and not built for transfusion purposes.
6. Increased demand for serum and emergency blood supply to 56 country hospitals through their Red Cross Blood Transfusion committees and donor panels.

Action Taken, etc.

1. Block of land acquired in Goderich Street by Red Cross Society.
2. Proposed to build warehouse type of building on this land to be used largely as store. Present buildings in Adelaide Terrace to continue as administrative and bleeding centre. Present laboratory space in Royal Perth Hospital to be given back to the hospital and bleeding done on Fourth Floor, Royal Perth Hospital, to cease and be done by Red Cross. Perth Hospital anxious to get these rooms for laboratory extension.
3. Departmental support required to obtain building permit for warehouse—7,500 square feet.
4. Red Cross to meet cost of land and warehouse from its own funds.
5. Maximum length of time these makeshift arrangements will enable the Service to continue unrestricted progress is approximately three years. The growing responsibility of production of blood and serum merits proper laboratories and facilities for safety of the products.

Provision Required for the Future.

1. Three-storeyed building with floor space of 20,000 sq. ft. on land opposite Royal Perth Hospital at present occupied by the State Electricity Commission of such construction as to allow extension upward of two floors for future needs.
2. This building will include Administration, Laboratory, Manufactory and Store and will replace Adelaide Terrace, Warehouse in Goderich Street and accommodation in Royal Perth Hospital.
3. It will be connected to the steam service of Royal Perth Hospital.

Decisions to be made.

1. A firm allocation of this land to Red Cross by the Government. It is understood 115 feet has been allotted and approved for such a building.
2. Nature of the agreement of this allocation.—This should provide for security of tenure by the Red Cross Society at a peppercorn rental.
3. Priority to be given in building this structure.
4. Proportionate cost to State Government and Federal Government.

The Red Cross Society is averse to Capital Expenditure without the freehold rights to the land. Even if the Society were willing to contribute to capital expenditure, such expenditure would result in a request for an increase of financial assistance for yearly running costs.

In previous deputations to former Ministers for Health the principle has been accepted by the Government that accommodation would be provided for the Red Cross Transfusion Service with the agreement that the Red Cross Society continue to run and maintain the Service.

Considerations in Priority.

1. Our present large deficiency in hospital beds requires rapid hospital construction. *Ipso facto* there will be an increased demand for blood and its products. Transfusion Service must therefore keep pace with increase in hospital accommodation.

2. Increased use of blood reduces length of stay in hospital of many types of cases and therefore adequate transfusion service is part of hospital bed economy plan.

3. The use of blood in many types of cases, and particularly in the rapidly increasing road accident case, is a life-saving measure that it is obligatory to provide.

4. The estimate of three years *as the limit* that emergency measures can extend to, indicates the need for immediate start on the new building.

5. It therefore appears that action is now required to clear the site, prepare plans and apportion the cost.

Consideration in Apportioning the Cost.

1. The Red Cross provides many voluntary workers.

2. It raises and provides a considerable amount of funds.

3. It obtains voluntary donors who would be unlikely to co-operate with any institution other than the Red Cross.

4. It is contrary to the policy of the Red Cross Society to make a charge for blood obtained from voluntary donors.

   Any charge made by Red Cross for blood or blood products would result in a loss of interest on the part of many donors and might give rise to a movement in favour of payment *to* donors which would become financially impossible.

   (Blood may reasonably be regarded as medicine on the "free list.")

5. The financial considerations of 4 are vastly outweighed by those of 1, 2 and 3.

6. A Blood Transfusion Service is an integral part of any hospital system and therefore the financial authority responsible for such a system must accept considerable responsibility for the cost of a Blood Transfusion Service.

7. Expansion to meet the needs of a National Emergency must involve Federal interests and therefore Federal financial commitments.

Appendix 6.

HOSPITAL WORKS.

METROPOLITAN AREA.

Child Guidance Clinic.

Alterations, etc.—nearing completion.

Claremont Mental Hospital.

M.O.'s quarters—nearing completion.
Senile female block—commenced.
T.B. Block—commenced.
New cool store—commenced.
Temporary accomodation for T.B. patients—95 per cent complete.
General repairs and renewals—work proceeding.
Alterations and repairs and renewals to administration block—working drawings being prepared.
New kitchen, etc., to X Block—working drawings being prepared.
Additions to workshops—sketch plans being prepared.

Heathcote Mental Reception Hospital.

Repairs and renewals—70 per cent. complete.
Additions to nurses' quarters—sketch plans in hand.

Lemnos Mental Hospital.

Repairs and renewals—80 per cent. complete.

Claremont T.B. Preventorium ("Moriston").

Alterations, etc.—commenced.

New Chest Hospital.

Preliminary sketches in hand. Commonwealth to pay.

T.B. Clinic, Perth.

Additions—sketch plans being prepared.

Wooroloo Sanatorium.

Change room and workshops—40 per cent. complete.
Six cottages and two M.O.'s quarters—completed.
Ward for sick staff—80 per cent. complete.
Roadways—nearing completion.
Additions to theatre block—tender being considered.
Refractory ward—tender being considered.
Accommodation for domestics—working drawings being prepared.
Incinerator—tenders being called.
Repairs and renewals to six cottages—tender under consideration.
Hot water to M.O.'s quarters—tenders being called.
Additions to Hostel—sketch plans in hand.
Sewerage—Scheme in hand.
Slow combustion cooker—sketch plans in hand.
Sewerage to farm buildings—Sketch plans being prepared.

" Devonleigh," Cottesloe.

Additions to nurses' quarters—sketch plans in hand.

Fremantle Hospital.

Repairs and renewals—75 per cent. complete.
Water service—95 per cent. complete.
New Theatre block—materials on order.
Additions to kitchen block—working drawings being prepared.
Pre-fabricated wards and additions to nurses 'quarters—sketch plans in hand.
Additions to laundry boiler house—sketch plans in hand.

Fremantle—" Woodside ".

Alterations and additions—working drawings being prepared, *King Edward Memorial Hospital.*

Laboratory—50 per cent. completed.
New Nurses' quarters—95 per cent. complete.
X-ray—working drawings complete and ready for issue.
Extensive additions—sketch plans being prepared.

Infectious Diseases Hospital.

Prefabricated wards, etc., for 108 patients—sketch plans being prepared.
" Carinya "—repairs and renewals—contract let 25th June, 1951.

Midland Junction.

Maternity block and nurses' quarters—working drawings being prepared.

Royal Perth Hospital.

Second section—under construction.
Laundry and workshops—nearing completion.
Remodelling of B. and C. Blocks—under consideration.
New nurses' quarters—sketch plans being prepared.

Home of Peace.

Proposed 24 beds and new kitchen.

Mt. Henry Home.

Plans being prepared for 100 hospital beds.

" *Sunset* ".

Remodelling of existing wards to provide 50 hospital beds—work proceeding.

Red Cross Blood Transfusion Service.

Land in Wellington Street, opposite Royal Perth Hospital, allotted for new building.

COUNTRY HOSPITALS.

Albany General Hospital.

Alterations for use as Nurses' Training School—nearing completion.
Temporary wards—contract let 25th June, 1951.
Slow combustion cooker authorised.

Albany Maternity Hospital.

Additions and alterations—complete.

Albany Regional Hospital.

Sketch drawings being prepared.

Beverley Hospital.

Remodelling and additions—⅔ complete.

Boddington Hospital.

Repairs and renewals—completed.

Boyup Brook Hospital.

Alterations and additions—75 per cent. complete.

Bridgetown Hospital.

Drainage—in hands of Principal Architect.
Renovations and renewals—contract let 28th May, 1951.
Query—New General Hospital, or quarters on present site.

Broome Hospital.

Alterations and additions—nearing completion.
Slow combustion cooker proposed.

Broome Native Hospital.

Nissen Huts—construction proceeding.
Septic tank installation—materials on order.

Bruce Rock Hospital.

Alterations and additions—75 per cent. complete.
Renovation and renewals—completed.
New Nurses' quarters—complete.

Bunbury Hospital.

Alterations and additions—60 per cent complete.

Bunbury Regional Hospital.

Sketch plans in hands of private architects.

Bunbury.

Lease of " Stirling " Private Hospital—negotiations proceeding.

Busselton Hospital.

Alterations, additions, renovation and renewals—20 per cent, completed.
Slow combustion cooker—contract let 2nd July, 1951.
Drainage—90 per cent. complete.
Lavatory accommodation in nurses' quarters proposed.

Carnarvon Hospital.

Tender accepted for new hospital block.

Collie Hospital.

Alterations and additions—completed.
Lavatory accommodation for medical officers—contract let August, 1951.
Pre-fabricated wards—materials ordered.

Coolgardie Hospital.

New Drainage and septic system proposed.

Corrigin Hospital.

Alterations and additions—98 per cent. complete.

Cunderdin Hospital.

Hot water and drainage—completed.
Additions—tenders called without result.
Additions to nurses' quarters—working drawings being prepared.

Dalwallinu Hospital.

Septic tank installation—95 per cent. complete.
Additions—contract let 20th February, 1950—work not commenced.
Further additions, etc., proposed.
Quarters, new kitchen and staff dining rooms—plans approved.

Denmark Hospital.

Pre-fabricated wards proposed.

Derby Hospital.

Additions—materials on order.

Derby Leprosarium.

Additions—materials on order.

Derby Native Hospital.

Nissen huts—20 per cent. complete.

Dwellingup Hospital.

Remodelling and additions—95 per cent. complete.
Fire service proposed.

Esperance Hospital.

Alterations and repairs proposed.

Geraldton General Hospital.

Renovation and renewals—completed.

Geraldton Maternity Hospital.

Renovation and Renewals—completed.

Geraldton Regional Hospital.

Sketch plans in hands of private architects.

Gnowangerup Hospital.

Hot water service installed.
Repairs and renovations—60 per cent. complete.
Sewerage, etc.—specifications being prepared.

Hall's Creek.

New hospital—materials on order. Australian Inland Mission.

Harvey Hospital.

Renovation and renewals, hot water service and night nurses' quarters—completed.
Additions to nurses' quarters proposed—plans approved.

Jarrahdale Hospital.

Drainage—50 per cent. complete.

Kalgoorlie Hospital.

Renovation and renewals—nearing completion.
Additions to theatre block—sketches in hand.

Katanning Hospital.

Slow combustion cooker—contract let 17th August, 1951.
Alterations and additions—85 per cent. complete.

Kellerberrin Hospital.

New kitchen block completed.
Additions to staff quarters—working drawings being prepared.

Kojonup Hospital.

Additions—sketch plans being prepared.

Kondinin Hospital.

New laundry proposed.

Kununoppin Hospital.

Additions, etc.—tenders called 10 times without success.

Lake Grace.

New Hospital—70 per cent. complete.

Marble Bar.

Additions—materials on order.

Manjimup Hospital.

New midwifery block proposed. Hot water service installed.

Margaret River Hospital.

Alterations and additions—80 per cent. complete.

Meekatharra Hospital.

New hospital proposed.

Merredin Hospital.

Additions—80 per cent complete.
Installation of slow combustion cooker propose.

Moora Hospital.

Renovation and renewals—contract let 13th August, 1951.
Drainage—tenders called without result.
New staff quarters proposed.

Morawa Hospital.

Remodelling and additions—work just commenced.

Mt. Barker Hospital.

Additions proposed—sketch plans being prepared.

Mt. Magnet Hospital.

New staff quarters—complete.
Additions—25 per cent. complete.
Drainage—working drawings being prepared.

Mullewa Hospital.

Alterations and additions—materials on order.

Nannup Hospital.

Hot water— contract let 19th March, 1951.
Renovation and renewals—contract let 19th March, 1951.
Additions to staff quarters—contract let.

Narembeen Hospital.

Additions to nurses' quarters and alterations to kitchen proposed.

Narrogin Hospital.

Renovation and renewals—80 per cent. complete.
New domestics' quarters—10 per cent complete.
Slow combustion cooker—contract let 30th April, 1951.
Additions to quarters—contract let August, 1951.

Narrogin—" Vailima " Hospital.

Renovation and renewals—contract let 16th July, 1951.
Sewerage installation—sketch plans in hand.

Norseman Hospital.

New pan block and hot water service completed.

Northam Hospital.

Additions and alterations—completed.
Further additions and alterations—work just starting.
New boiler house and additions to laundry—specifications being prepared.
Pre-fabricated wards—approved.
Alterations and extensive renovation and renewals—sketch plans being prepared.

Northampton Hospital.

Additions—sketch plans being prepared.

Onslow Hospital.

Additions—materials on order.

Pemberton Hospital.

Additions——contract let November, 1951.
Renovations and hot water—completed.

Pingelly Hospital.

Improved drainage proposed.

Pinjarra.

New hospital—50 per cent. complete. New nurses' quarters completed.

Port Hedland Native Hospital.

Nissen huts—materials on order.

Quairading Hospital.

Alterations and additions—completed.

Roebourne Hospital.

Nissen huts—materials on order.

Three Springs Hospital.

New nurses' quarters—25 per cent. complete.
Alterations and additions—contract let 30th July, 1951.

Wagin Hospital.

Additions—contract let 9th July, 1951.

Williams Hospital.

Improved drainage—completed.
Septic tank installation proposed.

Wongan Hills Hospital.

Children's ward —completed.
Water supply—practically complete.
Hot water and sewerage—working drawings being prepared.

Wyalkatchem Hospital.

Additions—sketch plans approved.

Wyndham Hospital.

Alterations and additions—20 per cent. complete.

Wyndham Native Hospital.

Nissen huts—materials on order.

Yarloop Hospital.

Alterations and additions—95 per cent. complete.

York Hospital.

New laundry—completed.
Renovation and renewals—contract let 27th August, 1951.
Escape stairs—sketch plans being prepared.

Wittenoom Gorge.

Nursing post—commenced.

13th November, 1951.

W. S. DAVIDSON, M.B., Ch.B., D.P.H.,
Deputy Commissioner of Public Health.

APPENDIX X.

ARGENTINE ANTS.

By Dr. W. S. Davidson, Deputy Commissioner of Public Health.

The presence of Argentine Ants was reported in Australia first in Victoria in September, 1939, and later in Albany, Western Australia, in April, 1941.

Exaggerated importance has been given to the destruction caused by this insect in America and other countries before the introduction of residual insecticides. In incurring expenditure in its control or eradication it is important to bear in mind just why such measures are necessary and to determine the expenditure justifiable and apportion the cost equitably.

To the impartial reviewer the " Crime Sheet " of the Argentine Ant shows him to be a minor criminal when compared with many indigenous insects and pests who pursue their nefarious ways to the detriment of our economy and health without attracting a fraction of the public interest aroused by the Argentine Ant. It may be that through no fault of his own he suffers from the stigma of a foreign name which has drawn down upon him such flames of wrath and opposition in this country of his latest adoption. There is an interesting and probably controversial conjecture in the suggestion that had he in the first place been called the Albany Ant he never would have aspired to a place in the Health Act and this report would not have been written.

Although theoretically it may be possible, he has not been shown to transmit disease.

He does not himself attack fruit trees, etc., but assists aphides and other parasites by protecting them from their natural enemies and possibly by transporting them from tree to tree.

He is attracted by all manner of foodstuff and invades houses in search of it.

Apart from occasions when ants receive gratuitous transportation in contravention to Argentine Ant and Quarantine Regulations, the ant must travel on his feet, little use is made of wings. His spread throughout the country is therefore slow and insidious and every step he takes he is at the mercy of residual insecticide sprays.

At the time when there was general agitation to induce the Government to destroy the Argentine Ant much stress was laid on its potential destructability in orchards, but it is of interest to note that this argument was largely used by urban householders and does not seem to have caused much concern among the orchardists who must in any case protect their trees from aphides, etc., by the self same means that are effective against Argentine Ants. It was the householder, unaccustomed to the necessity of covering up food and cleaning up rubbish and litter in his house and yard, that resented the incursion of the Ant. It would seem, therefore, that his greatest crime is his tenacious capacity to become a household pest.

This brings to mind the widespread opposition of urban local authorities to the presence of the Ant in the Health Act. Their contention being that he was an agricultural pest and should be dealt with under the Vermin Act. An interesting feature of the Vermin Act is that, although any area may be declared a Vermin area, no rates for the destruction of vermin may be levied in a Municipality or Townsite. Had, therefore, the Government conceded to the request of local authorities to administer the Ant Campaign under the Vermin Act, the possibility arose that any rates levied to finance it would have been drawn from practically all the State except the parts infested with the ants and that the orchardist and the agriculturalist who were already bearing the cost of their own incidental spraying would have also borne the cost of controlling the ant in the urban household.

It may have been this that induced a Ministerial recommendation in April, 1948, and later a Cabinet decision, to include the Ant as a Health Act responsibility or it may have been the attractiveness of the legislative simplicity of adding " and Argentine Ants " to the Health Act and thereby placing the onus on an existing organisation. Whatever the reason, apart from the clearing of rubbish and litter and the coincidental destruction of other insects inimical to the health of man, who are involved in the unselective action of the anti-ant sprays, there is little or no medical reason for inclusion of Argentine Ants in any health administration.

Local authorities made use of this criticism to protect their Health Rates from an expenditure they did not consider justifiably levied against that account. Health Inspectors also felt that Ant Control was an extension of their duties which could only be performed by sacrifice of valuable time normally spent on more orthodox health control measures. Only after considerable discussion and substantial financial support from the Treasury did local authorities agree to the final scheme. Agreement, however, having been reached, local authorities have given utmost co-operation, and with few exceptions carried out their part efficiently and with enthusiasm.

The Commonwealth Government was asked by the Premier in February, 1949, to organise and finance a Commonwealth campaign against the Ant. The Prime Minister referred the matter to the Australian Agricultural Council. The Standing Committee of that Council reported that : " From experience overseas, as well as in Australia, effective methods of control are available but complete eradication of this pest appears impracticable. Since pest control is primarily the responsibility of the States, the Standing Committee recommends :—

" (a) That States concerned use every effort to control the Argentine Ant, and to restrict the areas which are infested ;

(b) That all States be urged to undertake surveys with a view to determining the present limits of infestation of the Argentine Ant ; and

(c) That the Council for Scientific and Industrial Research be requested to make further investigation into :

  (i) The possibility of evolving improved methods of control, and

  (ii) The possibility of completely eradicating the pest from infested areas ; and to issue when appropriate, an authoritative statement as to the results of such investigations."

The final set up then as regards this State was that the campaign would be carried out by the Department of Public Health with the technical assistance of the Government Entomologist and that the Government would meet the major part of the expenditure.

First action was taken to minimise spread to country areas by spraying railway yards at Perth and Fremantle in December, 1949.

A trial was made at eradication in the selected areas of Fremantle and Melville, January to March, 1950.

This attempt at eradication clearly indicated that if the method was applied to the whole infested area a large labour force would have to be employed in order to cover the area in reasonable time and that the cost would be in the nature of quarter of a million pounds. Furthermore, later examination of the ground covered showed that in certain instances reinfestation had taken place and that spot treatment and careful supervision would have to be continued for some time.

In order therefore to cover a large area quickly, and in a manner commensurate with our means, a plan of control was evolved and Argentine Ant Regulations gazetted in 20th March, 1950. In general the Regulations throw upon the owner or occupier the responsibility, under penalty, of adopting effective measures against Argentine Ants on infested property and preventing their transport to other areas.

The details of the campaign are given in Inspector Flower's report. It met with considerable success and approval but was unfortunately terminated prematurely owing to a sudden and unforeseen world shortage of D.D.T.

Efforts are at present being made to stockpile for next year's campaign, but at present these are meeting with little success. It may be necessary to rely entirely on bait, a contingency for which we have prepared. It may not be out of place to indicate here that eradication has been carried out in cities in America, with bait alone, long before D.D.T. was on the market.

The C.S.I.R.O. have also played their part in the investigation of ant eradication and at present we are very favourably impressed with the results of a new chlorinated hydrocarbon called Chlordane with which they are experimenting. Inquiry has been made in the United States of America as to possibility of supply for 1951–52. If the experimental evidence is substantial in the field we can look forward to eradication in the not too distant future. In the meantime control must go on and the depredations of the ant confined and minimised.

W. S. DAVIDSON.

APPENDIX XI.

ARGENTINE ANTS.

REPORT BY INSPECTOR C. E. FLOWER TO THE DEPUTY COMMISSIONER OF PUBLIC HEALTH.

I submit herewith a report on the Argentine Ant Control campaign.

The basis for this campaign, a brief outline of which is given here, was circularised to all Local Authorities in April, 1950.

Government Action.

(a) Supply D.D.T. free to Local Authorities for the treatment of public property.

(b) Supply spraying machines on loan free to Local Authorities.

(c) Provide, through Local Authorities, D.D.T. and posion bait to householders at cost price.

(d) Produce propaganda and information. This to include an " Argentine Ant Week " twice a year in order to get concentration of effort at one time.

(e) Recoup Local Authorities the cost of spray labour. This recoup not to exceed the wages of three men per power spray.

Local Authority Action.

(a) " Control spraying " of public property.

(b) Distribute on payment outdoor D.D.T. and bait to the public.

(c) Instruct and supervise public action.

Public Action.

(a) The owner and occupier of any infested property was required to take action against Argentine Ants by clearing, spraying, and baiting.

(b) The removal or cartage of infested material was prohibited.

Details of sales of D.D.T. and bait, wages recoups, supply of bulk D.D.T. appended to this report.

5,953 gallons of 20% water soluble D.D.T. were supplied to Local Authorities for the treatment of streets, etc. This figure would have been much greater but for an acute shortage of insecticide which occurred towards the end of the summer.

Fifteen power sprays were available to Local Authorities. Ten of these were in almost constant use throughout the season.

Three rubber-tyred trolleys which had been built for house spraying experiments the previous year were in demand by Local Authorities who could not afford to release a motor vehicle for street spraying.

9,737 half-gallon tins of 20% water soluble D.D.T., 18,002 bottles of ant bait, and 3,664 bait containers have been purchased by the public through Local Health Authorities.

Other preparations sold by Local Authorities for ant extermination are as follows :—

20% *Water Soluble D.D.T.*—	
26oz. bottles	490
20oz. tins	5,761
8oz. bottles	384
5% *Kerosene Base D.D.T.*	525 gallons
D.D.T. Dispersable Powder—	
4oz. packets	1,334
Ant Bait—	
4oz. bottles	992

These sales, which do not take into account the large quantities of proprietary insecticide which must have been used, represent an expenditure by the public on ant control of approximately £9,000.

An " Argentine Ant Week " held early in November was used to mark the opening of the summer campaign. During this week thousands of informative leaflets were distributed, posters were displayed, and slides were exhibited on all suburban picture theatres. Through the courtesy and co-operation of the Press, Local Authorities and Broadcasting Stations, a considerable amount of publicity was obtained.

Prior to this drive only a small proportion of the population in infested areas were taking action against the Argentine Ant. A cross section survey made during the previous winter of 2,565 houses in known infested areas showed that 27% were using recommended methods of control, 16% were using other forms of treatment, and 57% were taking no action whatever.

Although it has not been possible to repeat this survey, there is no doubt that " Argentine Ant Week " did stimulate a public interest which was reflected in the increased demand for baits and sprays and for information regarding their use.

The other objective of " Argentine Ant Week " was to obtain concerted action by householder and Local Authority as it was felt that a concentrated and combined attack would bring about a greater reduction in the ant population and prevent re-infestation from untreated property.

The effect of this concentrated action was to some extent minimised by the length of time required by Local Authorities to cover their area. In future it will be advisable to commence the street spraying programme in advance of Argentine Ant week in order to ensure that the residual effect of the insecticide is contemporary in public and private property.

£2,580 was paid to Local Authorities to recoup the cost of spray labour used in treating public property. This amount does not include clearing transport, inspectorial and other costs ; these were borne by the Local Authorities concerned.

Most Local Authorities undertook the " control spraying " of streets, and, as already mentioned, ten of the Department's power sprays were in almost constant use.

In November the weekly consumption of 20% D.D.T. for street spraying was 250 gallons, but as the men became familiar with the work and various minor difficulties were overcome, this output gradually increased to a peak consumption in February of 700 gallons, representing the application of 14,000 gallons of diluted spray (1%) per week.

The effect of street spraying was most marked when householders carried out simultaneous treatment, but, even when this co-operation was lacking, the results justify the labour and expense. From numerous inspections made of sprayed areas it appears that, excluding the transport of ants in sand, soil, pot plants, and other mechanical means, this form of spraying, properly executed, will retard the progress of the ant and should keep the infestation within its present limits and lead to its eventual extermination.

All available information on the Argentine Ant was forwarded to Local Authorities so that their officers were in a position to instruct householders in the best methods of control.

Informative leaflets for distribution to the public were also supplied.

Except in isolated cases no action was taken to enforce householders to comply with the Argentine Ant Regulations. To do so would require an army of inspectors and is considered impracticable at this stage.

The transfer of ants in soil, building material, pot plants, etc., presents similar difficulties. However, nurseries which could be responsible for spreading infested material have been under the surveillance of Agricultural Department inspectors for some time.

The extent of the infested areas within the State has been estimated as follows :—

Metropolitan area	13,000	acres
Bunbury	30	,,
Albany	750	,,
Total	13,780	,,

A small isolated infestation reported from Mundaring was thoroughly treated by Departmental officers. Subsequent inspections made at monthly intervals seem to indicate the complete eradication of the outbreak.

In addition to the general conduct of the campaign, this Department has undertaken ant control work at Royal Perth Hospital, Princess Margaret Hospital, Home of Peace, and Mt. Henry Home, and has also co-operated with the Agricultural Department and the Council for Scientific and Industrial Research in experimental work at Subiaco.

Earlier in this report mention has been made of an acute shortage of D.D.T., which occurred towards the end of the summer. This shortage, which is apparently world-wide, seriously curtailed the control programme and prevented the treatment of areas, particularly those on the perimeter of the infestation, which would have been included in the operations.

Consideration was given to the use of alternative insecticides such as benzene hexachloride (B.H.C.) and chlordane, but there were objections to these.

(a) Crude B.H.C., although comparable in price to D.D.T., has an objectionable odour, and its residual effect against ants does not appear to be as good.

(b) Pure B.H.C. or Lindane is odourless, but was twice as costly and its residual effect was similar to the crude product.

(c) Chlordane, while promising in its effect upon ants, was a " dollar " product, also it was considered unwise to recommend its general use until more was known about its toxicity to humans.

If the Argentine Ant campaign is to continue in its present form, this Department must ensure adequate supplies of insecticide, as I am sure that Local Authorities would hesitate to employ spraying teams and undertake the spraying of streets and public places unless they could be guaranteed a continuous supply of material for this work.

It appears that the only means of ensuring an ample supply of insecticide will be for this Department to " stockpile," if possible, sufficient D.D.T. for the coming year's operations. Failing this reliance will have to be placed on the use of " bait " as a means of controlling the Argentine Ant.

(Signed) C. E. FLOWER,
Inspector.

Local Authority.	Total Area.	Infected Area.	Area Sprayed.	Wages Recoup.	20% D.D.T. Used.	Sales to Public.			
						½-gallon D.D.T.	Ant Bait.	Bait Containers.	Other Preparations.
METROPOLITAN.	acres.	acres.	acres.	£ s. d.	gallons.				
Bassendean	2,676	100	*Nil*	*Nil*	*Nil*	132	504	448	
Bayswater	6,848	330	24	59 16 0	135	95	276	121	
Belmont	9,920	90	9	64 10 11	48	118	144	*Nil*	
Canning	....	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	12	*Nil*	
Claremont	1,168	125	16	79 10 6	147	168	72	48	
Cottesloe	957	70	7	35 0 0	90	84	144	180	144 8oz. bottles D.D.T.
East Fremantle	770	*Nil*	*Nil*	*Nil*	*Nil*	40	24	*Nil*	
Fremantle	3,750	180	Area Sprayed 1949/50	*Nil*	*Nil*	348	108	*Nil*	140 8oz. bottles D.D.T.
Guildford	546	3	*Nil*	*Nil*	*Nil*	6	24	24	
Melville	13,184	90	Area Sprayed 1949/50	*Nil*	*Nil*	55	48	*Nil*	
Midland Junction	1,617	65	Not available	71 8 8	135	120	*Nil*	*Nil*	5 gallons indoor spray
Mosman Park	832	95	8	84 0 0	926	56	144	204	
Nedlands	5,120	360	*Nil*	*Nil*	*Nil*	720	732	396	
North Fremantle	820	75	*Nil*	*Nil*	*Nil*	70	*Nil*	*Nil*	46 26oz. bottles D.D.T.
Peppermint Grove	256	15	*Nil*	*Nil*	*Nil*	24	72	*Nil*	
Perth	15,475	5,900	427	559 9 8	1,666	4,628	8,640	*Nil*	5,185 1-pint tins D.D.T.
Perth Road Board	28,416	2,310	215	585 16 5	1,013	320	2,004	24	1,344 4oz. packets D.D.T. powder ; 444 26oz. bottles indoor spray.
South Perth	5,648	1,450	160	200 0 0	404	788	624	612	520 gallons indoor spray.
Subiaco	1,746	1,746	119	647 5 0	1,154	848	2,376	*Nil*	576 1-pint tins D.D.T.
COUNTRY.									
Albany	8,372	750	Not available	160 12 11	167	646	*Nil*	*Nil*	992 4oz. bottles D.D.T.
Bunbury	2,075	30	20	32 14 3	68	40	*Nil*	*Nil*	
PUBLIC HEALTH DEPT.	....	....	....	....	....	431	2,054	1,507	
Totals	....	13,784	....	2,580 4 4	5,953	9,737	18,002	3,664	

APPENDIX XII.

REPORT BY THE MEDICAL SUPERVISOR OF INFANT HEALTH, DR. E. M. STANG.

To the Commissioner of Pubilc Health,

I have the honour to submit a report on the Infant Health activities throughout Western Australia for the year ended 30th December, 1950.

The number of individual babies who attended Centres throughout the State for the period under consideration was 20,075 as against 18,063 for 1949, and 17,488 for 1948. I think the increased numbers are attributable to both an increased " birth rate " and increased number of migrant babies coming into the State, not to an increased interest in the service available, because it is estimated that the vast majority of the mothers of babies in the State do take advantage of the service and attend more or less regularly. The births reported for 1950 were 12,290 as against 11,949 for the previous year, showing an increase of 341.

The total attendance at the Centres was 188,322, this figure again being an increase on the previous year, when it was 168,436, an increase of nearly 20,000. The increased attendances can be attributed to three new Centres and 27 new Sub-Centres having been opened, making easier access to the Centres for the mothers concerned.

In addition to these figures must be added the figures of the Correspondence Nurse, who had on her roll 874 individual mothers and 228 expectant mothers in constant communication with her. These mothers, in addition, paid 644 individual visits to the Sister and wrote in 2,375 letters.

Home Visits.

The visits paid by the Infant Health Sisters to the homes where the babies are being reared is considered of the utmost importance, because in this way can be seen the conditions under which the child is brought up, and it is necessary for the Sister to know this when giving advice and direction to the mother. Usually only one visit is paid to the home, except in cases where there is a special need. This visit is paid as soon as possible after the mother comes home from the hospital with the new baby. The total number of such visits paid to infant homes was 20,301 for the year as compared with 17,753 for the previous year.

Telephones.

During 1950 a number of the Infant Health Centres, both in the country as well as the metropolitan area, have had the telephone installed. This has improved the service that we have been able to give to the mothers, as on very wet days the mothers can get advice from the Sister by telephone. Also it is of great advantage in the case of any infectious disease in the house. In such circumstances the mother, of course, does not go to the Centre because of the risk of infection, but at the same time she can get the necessary help from the Sister by telephone for her baby. The telephone is of particular value in the country districts.

Advices given either by telephone or letter (not counting the Correspondence Scheme) total 3,872 as against 3,122 for the previous 12 months.

Breast Feeding Returns.

A question which is disturbing those in charge of Infant Health work throughout Australia, and I should say, throughout the English-speaking world, is the fact that there is a marked decrease in breast feeding, which is the natural feeding for the baby. In some cases it is because the mother does not wish to breast feed for social reasons ; and in other cases she simply cannot do so because she is overworked and overtired, and her milk goes. In other words, she is not leading the type of normal life that was intended by nature for women bringing up their babies. A certain amount of quietness, relaxation and freedom from worry is most essential to produce the placidity which is a necessary accompaniment of a normal and natural mother. So many of these factors are non-existent today.

A determined effort has been made by the Infant Health Service to increase the amount of breast feeding amongst the mothers and accurate returns are now being required from the Sisters to give an idea as to the amount of breast feeding being carried out in their particular districts. By the figures submitted it is seen that some districts are outstandingly in advance of others in regard to breast feeding, and I think in these cases it is due to the enthusiasm and patience of the sisters that such good figures are obtained, because the mothers are encouraged, educated, and helped to continue with breast feeding.

The breast feeding returns for the year ending 1950 showed that throughout the State 28.31 per cent. mothers fully breast fed their babies for the first five months of life and 20.2 per cent. partially breast fed for the same period, making a total of 49 per cent. of babies who received a certain proportion of breast milk during the first five months of life. There is nothing to take the place of breast feeding in its value to the child, both from the nourishment standpoint and the protection that the child receives against infectious diseases. Furthermore, breast feeding is very much better for the mother psychologically, physically and mentally.

Expansion.

The Infant Health work has continued to extend, and at the beginning of July the South Perth Centre and Sub-Centres, together with the Bicton Centre and Sub-Centres, had their boundaries re-allocated in such a way that these two Centres became three full-time Centres with three Sisters operating in the areas concerned. This gave greatly increased service to the district and was much needed. The new Centre which arose took in Kensington and the large and rapidly growing area of Applecross.

A similar sub-division was effected in the Claremont Centre and Sub-Centres in connection with the Nedlands and Subiaco Centres and Sub-Centres. Here again, these three Centres were sub-divided to form four. The sub-division has proved of great benefit.

Arrangements were also completed for the establishment of a new large Travelling Infant Health Centre to serve Wyalkatchem, Dowerin, Goomalling, Koorda, Kununoppin, Bencubbin, Nungarin and all the surrounding districts. This Centre was scheduled to open in the first week of the new year. This was the last large area in the State without an Infant Health Centre in its midst. With the establishment of this Travelling Centre the State is now being fully covered, and it merely remains to divide up existing Centres as they grow too big for one nurse, or to start new Sub-Centres or Centres in new suburbs as they arise and develop.

There are now 45 full-time Centres and 236 Sub-Centres.

Centres—		
Metropolitan, including Correspondence Scheme	24	
Country	21	
		45
Sub-Centres—		
Metropolitan	82	
Country	154	
		236
Total Centres and Sub-Centres for whole State		281

When any of the Centres are closed through the prevalent shortage of nurses, and this does happen occasionally, the mothers can obtain assistance from the Correspondence Infant Health Sister until their own Centre re-opens.

New Infant Health Buildings.

Work in connection with new Infant Health buildings throughout the State has progressed steadily and markedly. New Centre buildings have been erected and opened at Wembley, Kensington, Fremantle, Cannington, Armadale, and Hyden.

Work has been commenced on Infant Health buildings, which include Nurses' Quarters, at Bunbury, Corrigin, Kalamunda, and Quairading, and Swanbourne has commenced building non-residential ones.

At Subiaco the Centre has been moved into new premises which are much more centrally situated, has a great deal more room, and has been put into suitable condition for use as an Infant Health Centre. These premises will serve quite satisfactorily until such time as the district is able to put up a proper Centre for its use. This latter project is already under consideration.

Many other districts are formulating their plans and making arrangements for the erection of Infant Health buildings, and it is expected that there will be a great deal of activity in this direction during the ensuing 12 months.

Correspondence Section.

The Correspondence Sister, as well as carrying out the work already specified at her office, has paid regular visits to the North-West as far north as Port Hedland, including the rapidly growing settlement at Wittenoom Gorge. Also this Sister has made regular visits to the Murchison district, extending right along the line as far as Wiluna. These visits have been made entirely by air.

During these visits the Sister examined as many pre-school children as possible, as well as all the babies in the area. These visits are usually carried out by the Correspondence Sister herself, and three were made during this year, viz., in May, August, and November.

The trips to the North-West usually take from one and a-half to two weeks, and for the Murchison about one week.

The Correspondence Sister, in addition to giving service to all the mothers in the districts mentioned, keeps in contact with all isolated and scattered mothers throughout the whole State. In addition, when a centre shuts down, the mothers in the districts affected are contacted and invited to keep in touch with this section until a new Sister is supplied. By this means a complete coverage is given in Infant Health work throughout the State.

North-West.

As an experiment an Infant Health Sister was stationed at Derby, whose duty is was to give Infant Health service to the babies at Wyndham, Derby, and Broome. This position was created to see whether such an appointment was justified. Experience has now shown that there are not sufficient babies in the area to justify a full-time Sister, and it can be carried out equally satisfactorily by the Correspondence section, which had previously done so for 17 years. In fact the Correspondence section has certain distinct advantages over this other method in as much as continuity of the work can be guaranteed. The Sister who is stationed there, owing to the fact there was not sufficient Infant Health work to occupy her was used for other purposes, such as in the hospitals, etc., consequently the continuity and reliability of the Infant Health work was interfered with. The Department was anxious to give the North-West this service if practicable, but the majority of the districts themselves asked to revert back to the Correspondence Scheme.

Mothercraft Lectures.

These lectures were continued throughout the year and were organised in such a manner that the various Infant Health Sisters gave lectures to the students at the High Schools in their particular area, viz., Fremantle Infant Health Sister gave lectures at Princess May ; Victoria Park Infant Health Sister gave lectures at Perth Girls' High School, including all the High Schools in the metropolitan area, together with most of the Girls' Colleges. The Sisters in the country areas of Geraldton, Northam, Albany, Narrogin, Kalgoorlie, Kellerberrin, Manjimup, also gave instruction in Mothercraft.

The service has been offered to the Convent schools but they are not as yet interested in the lectures.

In the metropolitan area the Domestic Science teachers attended a Refresher Course at the Perth Infant Health Centre. This course embraced four lectures and enabled them to give these lectures in their own time to the special classes, and lightened the lecturing for the Infant Health Sisters.

Number of children lectured	615
Number of children taking examinations	564

Results—

Honours	77
Credit	158
Pass	237
Failures	92

All classes instructed attended either an Infant Health Centre to see it in working order, or the Mothercraft Corner.

Lectures were also given to Kindergarten students, St. John Ambulance Junior Cadets, Girl Guides, and a public talk to St. Aidan's Presbyterian Church Women's Guild, at which there were approximately 200 women present.

Radio Talks :

Radio talks were organised to be put on a network throughout the whole State. Our thanks are due to 6AM–PM for this free service. Special discs have been cut of the talks given by the Infant Health Sisters. These talks are put over on a regular session every week. In Geraldton and Kalgoorlie the local sister gives the talks direct at the station at the time specified. These radio talks receive very favourable comments, giving a regular and good service to the mothers, but in no way taking the place of visits to the Centre, merely adding to the service already given to mothers.

Infant Mortality.

The infant mortality rate was 27.13 per thousand live births for the year 1950, which is regrettably high in comparison with the Australian figure of 24.49.

Age Group.		1946.	1947.	1948.	1949.	Preliminary figures 1950.
Under 1 week	No.	213	223	220	230	232
	Rate	17.60	17.32	17.01	17.02	16.31
1 week and under 1 month	No.	43	34	27	30	29
	Rate	3.55	2.64	2.09	2.22	2.04
1 month and under 1 year	No.	120	141	84	97	125
	Rate	9.91	10.96	6.50	7.18	8.78
Under 1 year	No.	376	398	331	357	386
	Rate	31.06	30.92	25.60	26.42	27.13

It is of interest, however, to note that of the total 386 deaths under 1 year, 125 (or 32 per cent.) of the deaths were among that age group which would reasonably be expected to attend an Infant Health Centre (that is between one month and one year of age). The vast majority of deaths in the under one week age group (60 per cent. of the whole) are attributable to prematurity and midwifery problems.

Of the 125 babies in our province (over one month and under one year) who died, the following shows the causes of death :—

Cause.	No.
Pneumonia	48
Meningitis	1
Meningococcal	3
Tuberculosis	1
Enteritis	17
Mastoiditis	5
Intussusception	5
Marasmus	5
Accidents	19
Others	21
Total	125 deaths

From pneumonia 48 babies died, of which five came from Gnowangerup, the rest being scattered throughout the State, and without any apparent connecting link. All the rest of the deaths were scattered throughout the State, with the exception of the enteritis cases, of which four came from the migrant Camp Holden, and Marasmus cases, of which two came from the Immigration Camp at Northam and two from native settlements.

Pre-School Section.

A determined effort is being made by the Infant Health service to interest the mothers in the care of their pre school children. The Sisters are taking an interest in this section and are endeavouring to work up a pre school section on certain specified days per month in order to get the mothers to bring their pre-school children in for regular supervision.

It is recognised that the pre-school age is a vitally important period in the life of a child, and is one which is frequently neglected. The children are given very great care during infancy by the Infant Health movement, and then at six years of age they are taken on again and supervised regularly by the School Medical Service, but the intervening pre-school period is, and has been up to the present, " No man's land," Now we are hoping to make it a definite section of the Infant Health work, because this pre-school period is extremely important in the life of any child. It is during this particular stage of their life that so many children contract one of the various infectious diseases which can leave behind serious complications that may handicap the child for the rest of life.

Scales.

The position has been and is very difficult in regard to baby scales as we have been unable to import them from places outside the State. The firm in Perth which was making scales to conform to the Weights and Measures Act has ceased production ; therefore, the position is grim. Furthermore, the last time scales were purchased the cost was exceedingly high. Steps are now being taken to see if suitable scales can be imported at a reasonable rate from abroad.

Refresher Course.

The Refresher Course for Infant Health Sisters was held at the end of the year. It proved a great success and was of great benefit to all concerned. So much so that many compliments have since been paid, particularly from outside Doctors and mothers, who admired the uniformity and high standard of work maintained throughout the State.

The Doctors and specialists co-operated valiantly and a fine syllabus was presented. After the course a copy of every lecture was typed and given to the Sisters so that they would have the subject matter for reference.

It is hoped to hold a further Refresher Course during the coming year, and the subject matter this year will be " The Pre-School Child and his Problems."

Sisters.

The Infant Health service is fortunate in having an excellent group of Sisters who have worked very well and consistently over a great number of years, also the new Sisters coming in appear to take a great interest in the work and show a desire to stay with us as part of our permanent team, the only exceptions to this are those sisters who marry. The Sisters in the Infant Health service are chosen carefully as it is essential that they should have very pleasant personalities, so that the mothers will wish to come to see them. Apparently they are too well chosen and that is why so many are lost by us to matrimony. Nevertheless, some of these Sisters still stay and carry on the work, and the majority of them will, at all events, stay until such time as a substitute has been obtained for their Centre. This is appreciated.

Practically all the Infant Health Centres were open throughout the whole of the year, and where any Centres had to be shut for any reason, various of our ex-Infant Health Sisters, being married and living in the district, came forward to keep the Centre open until a permanent Sister could be obtained. Sisters have now been appointed to the staff for relief work for holidays, sickness, etc. These are not employed permanently but are Sisters who are agreeable to doing work whenever they are needed. Such Sisters are very great help to the organisation.

Holiday Leave.

It was decided during the year that as from 1951 the Sisters would all take their holidays at the same time, viz., following straight after Christmas and New Year so that all Centres throughout the State would shut down for three weeks, re-opening about the third Monday in January. This will be a decided advantage as the Sisters will be able to have their holidays at a good time of the year, and the majority of mothers will not be inconvenienced inasmuch as this is the time, particularly in the country districts, that so many go away on their holidays, as it is the end of the harvest and also is the school holidays.

Certain Centres will be kept open, such as Fremantle, Subiaco, Perth and the Correspondence section. Any mother who has a young baby or who is extremely worried about her child will be able to get in touch with the Sister at one of these Centres and get help and advice, either by personal visit or telephone.

As well as being a distinct advantage for the Sisters having the holidays at one set time, it is a decided economy to the Department as it saves the salary of the permanent reliever. Furthermore, it is difficult to retain such a Sister as it is impossible for her to establish a home as she is constantly on the move.

Lotteries Commission.

The Lotteries Commission have made their special contributions to the Sisters' salaries, and to the other expenses involved in the establishment of Centres.

The Commission has given money towards the cost of erection of new buildings, and in other cases, where they have not assisted with the building they have given money towards the furnishing of the room provided. All this help has been most acceptable. The Commission has also been generous in the provision of new scales when available, for Centres.

It is felt that the Lotteries Commission carry out their responsibilities to the public in a very fair and just way as far as Infant Health Services are concerned.

Local Infant Health Committees.

Local Infant Health Committees are to be found in many towns or suburbs where there is an infant Health building. The Committees are responsible for the building, furnishing and cleaning and maintenance of the Centre, and also for the purchase of a motor-car if one is necessary for the work of that Centre. These Committees are purely honorary and do a very great deal of hard work on behalf of the Infant Health activities in their town and district. The grateful thanks of the Department are due for their co-operation.

Many people have been on the various Committees for a long time and they say they are finding it increasingly difficult to recruit new members, because the attitude of the public seems to be that as the Federal Government takes a Social Service tax the Infant Health service should be the financial responsibility of the Government. As a result of this feeling there is a marked tendency for Local Committees to disband and hand over the whole of their duties to the Department. Where there is already a furnished building in existence then it is a comparatively easy matter to accept this responsibility and carry on, but where a building has to be erected the position is most difficult.

Local Authorities.

The Local Authorities are becoming very much more sympathetic towards Infant Health activities, and are in a great number of instances accepting a definite responsibility towards the work. In fact they are in many instances assuming the role of the Infant Health Committee. This evidence of interest is shown in certain places, e.g., Quairading, Beverley, Corrigin, etc., where the Local Authority has raised a loan to find any extra money that the Committee needed for the erection of a building. In some cases the Local Authority has assumed the full responsibility for the planning or erection of the building; this has happened at Fremantle, Bunbury and Kalgoorlie.

Government.

The Government has been very generous to the section of preventive public health work and recognised the value it is to the public. The Government has granted the requested money for any extra staff that was necessary for the further expansion of the work. The Government accepts responsibility for the payment of Sisters' salaries, together with all mileage rates, general travelling allowances and petty expenses of the Centres, and all literature and stationery needed for the work.

Conclusion.

To sum up, the past year has seen a steady development in the Infant Health work throughout the whole State, and it has been possible to keep practically all Centres open throughout the year, and to keep them operating fully and efficiently.

In addition, the drive for properly built and equipped Infant Health Centres throughout the State has gone forward with the results as shown in this report on that particular section. Furthermore, this drive is continuing and the next year will show, it is anticipated, even greater results.

E. M. STANG, M.B., B.S., D.P.H.,
Medical Supervisor of Infant Health.

APPENDIX XIII.

INFANT HEALTH CENTRES—ATTENDANCES.

Infant Health Report for year ended December, 31st 1950.	COUNTRY CENTRES.																			
	Albany.	Beverley.	Boulder.	Bridgetown.	Bunbury.	Busselton.	Corrigin.	Geraldton.	Kalgoorlie.	Katanning.	Kellerberrin.	Manjimup.	Moora.	Narrogin.	Norseman.	Northam.	Three Springs.	Wagin.	Waroona.	Wyndham, Broome, Derby.
Births Reported	305	200	303	215	319	298	184	322	424	251	284	236	221	254	70	278	157	400	280	87
Total Individual No. of babes attended Centre	456	344	333	169	414	499	269	426	447	350	409	351	306	394	74	452	315	550	551	417
Total Attendance of babes at Centre....	4,283	3,546	3,791	2,446	4,586	5,566	2,716	3,369	5,482	2,848	4,963	3,339	2,366	3,437	1,069	3,593	3,232	4,810	4,407	1,356
No. of Individual Expectant Mothers Advised	5	37	13	1	35	33	14	10	7	7	1	8	18	20	7	3	48	21	24	34
Total No. of Visits	526	250	550	131	811	....	35	573	809	306	419	340	339	536	147	821	207	510	220	588
Nos. referred to Doctors and Hospitals— (a) Babes	105	21	52	23	22	65	39	43	154	44	20	53	29	32	11	24	60	41	40	43
(b) Mothers	22	1	7	....	....	6	16	1	37	....	....	8	4	6	....	....	14	7	9	5
No. of Letters and Telephone Calls re advice	89	13	34	30	99	53	95	123	160	161	2	44	14	43	....	35	77	11	....	65
No. of such babes on Roll under 9 months	220	224	150	97	259	288	152	167	187	264	263	192	179	318	66	313	95	254	147	112
(a) Breast Fed	89	54	49	32	66	104	53	49	68	178	67	82	58	71	26	111	30	112	79	43
(b) Complementary Feeding	29	16	14	15	12	15	7	25	20	14	25	147	11	18	2	54	21	21	21	6
No. of babes Artificially Fed— (c) Fresh Milk	51	22	6	24	13	38	12	32	5	13	3	21	8	48	1	27	11	53	21	1
(d) Dried Milk	50	30	69	25	71	44	22	58	92	59	72	31	36	65	37	117	30	73	26	26
(e) Condensed Milk	1	2	1	1	5	....	6	1	2	....	1	5	1	2	....	3	2	13	....	....
(f) Patent Foods	....	....	....	....	1	1	....	....	....	....	....	6	....	2	....	1	1	....	....	....
(g) Educational Diets	....	....	11	....	91	86	52	2	....	....	95	....	65	112	....	....	....	82	....	36
Percentage of Breast Feeding of Babies from between 1st Jan. and 31st Dec., 1950— (a) Fully Breast Fed	17·54	26·78	25·0	15·57	39·71	43·49	16·94	23·44	24·43	11·23	14·96	22·58	20·77	26·58	25·67	22·43	25·98	31·93	29·23	....
(b) Breast Fed and Complement for 5 months	35·2	26·78	7·81	21·13	43·24	22·87	15·25	23·44	25·63	19·78	20·35	14·18	39·6	14·96	16·21	49·53	22·32	12·6	17·79	....

APPENDIX XIII—*continued.*

Infant Health Report for year ended December 31st. 1950.	METROPOLITAN CENTRES.																								
	Armadale.	Bicton.	Claremont.	Cottesloe.	East Fremantle.	East Victoria Park.	Fremantle.	Hollywood.	Inglewood.	Kalamunda.	Kensington.	Maylands.	Midland Jct.	Mt. Hawthorn.	Mundaring	Nedlands	North Perth.	Osborne Park.	* Perth.	South Perth.	Subiaco.	Victoria Park.	Wembley.	Total.	Total for Previous Year.
Births Reported	222	228	235	333	232	267	558	125	270	252	268	403	267	297	174	209	463	410	1,337	203	263	896	332	12,290	11,949
Total Individual No. of Babes Attended Centre	472	547	485	568	658	573	973	340	591	527	486	1,082	654	254	445	216	692	418	996	485	460	329	288	20,075	18,063
Total attendance of babes at centre	4,741	4,183	5,910	4,767	5,872	5,250	7,920	2,079	4,741	3,776	4,937	6,440	4,270	3,803	5,180	3,862	5,383	5,312	7,605	4,958	4,615	6,078	5,435	188,322	168,436
No. of Individual Expectant Mothers Advised	12	16	36	10	37	....	37	10	34	48	24	55	5	4	64	22	9	14	36	12	27	21	....	879	866
Total No. of Visits	507	417	1,120	673	646	184	837	251	440	1,075	280	364	175	507	1,308	377	695	424	405	269	567	243	428	20,301	17,753
Nos. referred to Doctors and Hospitals— (a) Babes	43	30	62	37	32	17	223	9	56	66	51	82	130	100	50	20	87	25	46	67	127	246	23	2,550	1,895
(b) Mothers	8	15	22	9	15	....	36	6	5	12	8	26	26	16	15	7	8	5	12	4	76	185	1	670	469
No. of Letters and Telephone Calls re advice	10	....	907	126	20	40	24	76	384	19	15	....	9	....	37	273	38	8	405	160	31	131	1	3,872	3,122
No. of such Babes on Roll under 9 months	220	170	172	113	438	228	358	272	331	199	279	369	193	203	180	116	322	540	627	295	152	220	190	10,134	9,845
(a) Breast Fed	85	85	103	54	135	85	147	129	179	76	108	163	84	79	75	61	107	163	282	94	103	88	81	3,987	3,926
(b) Complementary Feeding	10	14	6	14	21	13	39	7	26	24	16	35	22	28	17	15	27	34	95	24	9	32	14	931	1,049
No. of Babes Artificially Fed— (c) Fresh Milk	54	4	22	29	33	47	39	37	54	28	29	83	25	41	26	19	62	65	86	33	16	37	40	1,319	1,247
(d) Dried Milk	60	17	40	12	96	74	128	47	72	67	42	80	60	51	55	18	72	94	157	41	19	47	47	2,429	2,492
(e) Condensed Milk	11	....	1	4	7	9	4	3	....	3	10	7	....	4	4	3	10	11	7	9	5	12	7	177	161
(f) Patent Foods	....	10	....	....	1	....	1	1	....	1	4	1	2	....	3	....	....	3	....	9	....	4	1	53	187
(g) Educational Diets	....	40	....	....	145	....	....	48	....	....	70	....	....	....	....	....	44	170	....	89	....	....	....	1,238	783
Percentage of Breast Feeding of Babies from between 1st Jan. and 31st Dec., 1950— (a) Fully Breast Fed	16·84	27·31	46·29	29·32	40·77	26·96	21·64	56·55	30·39	21·51	20·98	48·57	38·48	18·5	35·73	38·70	23·66	37·59	17·02	28·94	63·8	33·14	32·35	Average for State 28·51	Fully Breast Fed for 5 Months 36·21
(b) Breast Fed and Complement for 5 months	28·42	29·62	24·0	27·72	49·02	44·94	21·64	22·2	28·75	22·15	17·85	20·4	10·07	15·41	22·2	25·8	19·43	20·74	16·73	8·65	13·8	13·75	16·6	20·82	Breast Fed and Comp. for 5 months 13·71

* Includes 551 births sent to correspondence centre.

E. M. STANG, M.B., B.S., D.P.H .

APPENDIX XIV.

REPORT BY THE MEDICAL SUPERINTENDENT OF SCHOOLS.

DR. E. M. STANG.

To the Commissioner of Pubilc Health,

I have the honour to submit a report on the School Medical Service in Western Australia for the year 1950.

1950 has been a momentous year in the history of the School Medical Service in Western Australia, as in this year it was entirely re-organised. The staff was increased from three to six full-time doctors and from three to eight nurses.

With this staff it is now possible to give a thorough medical examination to every child in all High Schools, State Schools, and Convent Schools throughout the country and metropolitan areas every two years. The schools where fees are paid are not examined as it is felt that these places have their own medical officer attending the schools.

All children at kindergartens are also given this medical examination when requested.

For the year under consideration 39,023 school children were examined, of which 20,720 were in country districts and 18,303 were in the metropolitan area. The number of children of school age throughout Western Australia in both Convents, Primary, and High Schools was 91,105.

The number examined reflects very creditably on the school Medical Staff, particularly when it is remembered that of the three new appointments none of them worked the full scholastic year, the last doctor only joining the service in the last four months.

Of the total number of children examined 19,241 were notified as having some defect, the majority of the defects being of a slight nature and requiring merely home attention or observation. By observation is meant that the parents were told to watch a certain condition, and if it got worse then to obtain medical attention.

Out of the total figure examined only 4,997 were referred for medical attention. This is very satisfactory and suggests that the previous years of School Medical Service are beginning to show definite results. 10,019 children were referred for dental attention.

It is interesting to note that a comparatively small number of children were referred for medical attention for throat and nose defects. During this year for the whole State—

> 1,651 children were referred for throat and nose defects, of which the majority were in the country districts, viz., 1,214, and only 437 in the metropolitan area. This is possibly due to the fact that the parents of metropolitan children have had more opportunity to be informed of the need for, as well as to receive, the necessary medical attention during their early years of life, which has not been so in the case of the country children. I hope now, with the more frequent medical examinations that the position will be improved in this regard.
>
> 1,334 children were referred for eye defects. Here again the greater number were to be found in the country districts, viz., 794, as against 540 in the metropolitan area.

The rest of the children who were referred for medical attention were suffering from a variety of troubles, such as heart defects, rheumatism, skin complaints, etc.

Nutrition.

Of the total number of children examined it was found that 28,904 were of normal nutrition, 5,228 were above normal standard, and 4,891, that is 12.5 per cent., were below standard nutrition. This latest figure is much the same as for 1949, and it is a pity that there are any under standard children in this country of good food and high wages. It does not, of course, mean that the children were grossly below standard, nor do I think it means that they are not getting enough to eat, but it probably means that they are not getting the right type of food. Still more education is needed in teaching the parents the proper food to give the children.

In this connection it is interesting to note that the Oslo lunch project is continuing to gain ground and that more schools each year are incorporating it as part of their school activity. The extent to which the project spreads will depend very greatly on the teachers in charge of the schools. It is they as a rule who are the deciding factor. If the Head Teacher is keen, the scheme gets under way and then the Oslo Lunch Committee take it on and do the necessary work involved.

In one school the teacher is not particularly interested, but the Parent and Citizens' Association is, and they have put on a keen parent who is taking a great interest in the project, and she is being paid by the Committee a certain sum per week to run the scheme. Even with paying out this weekly money still, as a result of her activities and bulk buying at wholesale or reduced rates, they are able to give the children a very satisfactory lunch for 9d. per day. I venture to say that it is a much better lunch than any parent can provide for the same figure.

During the winter time the children are, in addition, given a large bowl of hot vegetable soup, and this is included in the above price. The Committee are also anticipating that, instead of giving the milk as milk, they will be able to heat it up with cocoa to give the children the increased fat and warmth for the cold weather.

North-West.

In the majority of the schools in the North-West the children were examined by the local doctors. This work will be continued.

School Nurses.

During the year under consideration five extra nurses joined the School Nursing Staff. These nurses commenced duty about half-way through the year. A certain amount of time was taken in training them for their respective duties. When trained these nurses work with the school doctors ; when not working with the school doctors they are available for office work and home visiting.

Home Visiting.

The home visiting or follow-up section is considered of vital importance in the School Medical Service because it is as a result of these home visits that a great deal of the recommended medical attention is obtained. Many of the parents do not understand what is the matter with their children, but when, explained kindly, intelligently, and sympathetically by the school nurse it puts a completely different aspect on the problem, and very willing and active co-operation is usually obtained.

A great number of these home visits are paid during the school holidays when the full staff of nurses is available for the purpose. Admittedly this is not a very good time for such visits as the mothers are frequently away with the children on holiday trips. Nevertheless there is still a great percentage of mothers available to be seen.

Two thousand and fifty-two home visits were paid, of which 1,886 were in connection with children who required medical attention. Of this number it is pleasing to note that 741 of the children had already had the medical attention, and a further 481 promised to obtain it. 64 were, unfortunately, quite disinterested—they will be persevered with. Also the others who promised medical attention will be followed up to see that it is obtained. Of the visits paid 500 parents were either out or had left the district. At the moment there are large numbers of " floating " families about, particularly amongst the migrant section.

Child Hygiene.

Very close supervision is kept by the school nurses on the cleanliness of the schools, particularly in regard to pediculosis, that is, head infections. Through consistent action in this matter the percentage of dirty heads in the State Schools has been brought down from 14.8 per cent., and 28.5 per cent. in the Convents, in 1925, to .9 per cent. in the State Schools and 2.9 per cent. in the Convents for 1950. This figure has only come about through persistent efforts on the part of the nurses, together with full co-operation from the teachers in the schools. It would be nice to be able to report that the pediculosis percentage for the State was nil, but I doubt whether that will ever be reported until the millenium.

It is most noticeable that, as the " head cleanliness " of a family improves, so does the whole general cleanliness, *e.g.*, body, clothes, etc., and their attitude to life is improved, and self-respect is born or revived.

Health Camps.

In the past the children attending the Health Camps have been medically examined by our officers. This has now been discontinued as being no longer necessary, as the children are getting a full examination every two years in their own schools.

Correspondence Classes.

Close co-operation with the School Medical Service and the Correspondence Classes is now existing as we notify this section of the Education Department the different country districts that the doctors will visit and approximately the time that it is expected they will be there. The Correspondence section then notifies those of its pupils who are living in proximity to any one special school and requests them to keep in touch with the Head Teacher of that school to ascertain when the medical examination is to take place, and then to present themselves at that time so that they can also participate.

Conclusion.

It is suggested from time to time by various bodies that the school children should be given a yearly medical examination. This, I think, is unnecessary, as the average school child is a healthy little creature and once any of the common defects which may be present have been detected and treated, then, speaking generally, the child progresses normally and healthily right through the adult life. I think the yearly examination would be a waste of time, whereas a two-yearly examination is most beneficial as it enables a close check to be kept on all the children.

After all, it is the function of the family doctor to be the guide and protector of the children of his patients, and in the majority of cases that means, of the children in his district. The School Medical Service's function is to keep a general check on the child's physical condition and to draw the attention of the parents to any defect, of which they apparently were not aware. Any unexpected condition arising between the two school medical examinations is within the direct province of the local or family doctor. The School Medical Service is most appreciative of the co-operation they receive from these doctors.

The school nurses go to all the schools established in the metropolitan and sub-metropolitan area at least once, if not more often, during the year, and if there are any cases worrying the teacher they can be brought to the nurse's attention, who in turn would bring them to the Department's notice and arrangements can be made for a special examination of the children concerned. In this way one can claim that a yearly supervision was given, making it unnecessary to do a full medical examination of the whole school.

Furthermore, the teachers know that in the event of any epidemic arising they have only to notify the Department and an officer will go out and make a complete check of those children about whom they are worried. Such calls are made to us from time to time throughout the year. Thus it can be seen that there is close liaison between the Education Department and this Department.

Health Camps.

Year after year I bring up the need for permanent health camps to be established in this State where the delicate but not sick children can go for varying periods—anything up to six months, although two months is taken as the average—to have their health built up. At such camps the children are kept under close medical supervision. They have a certain amount of schooling, but the first emphasis is on health rehabilitation. Once their health is up to the required standard then the children can be returned to their homes and to the ordinary schools. We have not got one such Health Camp in this State, and I think at least one, and probably more, is a real necessity for any large organised community.

The School Medical Service is a specialised one, and also is one that is of the utmost value to the community, because its particular function is the early recognition of disease—in other words, recognition of disease before either the parents or the child himself realises that anything abnormal is present. By this early recognition and early treatment a great deal of sickness and expense can be spared both the individual and the community. The School Medical Service, since its enlargement and re-organisation, is now one that can take its place with similar services elsewhere. But one thing which we are lacking, and which we badly need, is, as I have already mentioned, a health camp for the health rehabilitation of the sub-standard child.

E. M. STANG, M.B., B.S., D.P.H.,
Senior Medical Officer of Schools.

APPENDIX XV.

SCHOOL MEDICAL SERVICE.

EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOLS, 1950.

—	No. Examined.	No. Notified.	No. referred for Medical Attention.	No. for Home Attention and Observation.	No. requiring Dental Attention.	Re-calls.	Specials.	Skin Complaints.		Nutrition.			Eyes Medical Attention.	Tonsils Medical Attention.
								No.	%	3.	Under 3.	Over 3.		
							METROPOLITAN SCHOOLS.							
Boys	9,755	4,801	1,095	2,568	2,647	330	20	....	....	7,602	1,411	742	....	....
Girls	8,548	4,494	1,021	2,478	2,331	345	46	....	....	6,567	1,037	944	....	....
Total	18,303	9,295	2,116	5,046	4,978	675	66	1,071	5·8	14,169	2,448	1,686	540	437
							COUNTRY SCHOOLS.							
Boys	10,495	5,013	1,411	2,182	2,556	31	....	....	....	7,666	1,550	1,279	....	....
Girls	10,225	4,933	1,470	2,332	2,485	26	....	871	....	7,069	893	2,263	....	....
Total	20,720	9,946	2,881	4,514	5,041	57	....	871	4·2	14,735	2,443	3,542	794	1,214
							STATE TOTALS.							
Boys	20,250	9,814	2,506	4,750	5,203	361	20	....	....	15,268	2,961	2,021	....	....
Girls	18,773	9,427	2,491	4,810	4,816	371	46	....	....	13,636	1,930	3,207	....	....
Total	39,023	19,241	4,997	9,560	10,019	732	66	1,942	4·9	28,904	4,891	5,228	1,334	1,651

APPENDIX XVI.

REPORT BY THE SENIOR DENTAL OFFICER, MR. A. G. McKENNA.

To the Commissioner of Pubilc Health,

At the end of 1949 there were still only five dentists employed in the School Dental Service, despite the fact that the full establishment authorized was twelve ; seven vacancies, therefore, remained to be filled.

During 1950 we were much more successful in attracting new recruits, so much so that at the end of the year, despite one resignation, only one position remained to be filled ; and although these new people worked for only part of the year there was a big increase in the number of schools visited and in the number of children actually treated. I am sure that the increase in salaries and allowances over the year had a lot to do with our success in adding to our staff.

Periods actually worked by the staff were as follows :—

5—full-time
2—9 months each
2—6 months each
3—2 months each

The equipment necessary for the new appointees was not easy to obtain, but by the end of the year we were in the position that everything had come to hand except four trailers which were to be used as mobile surgeries. However, pending their completion, the men who eventually are to use them have been able to work (although to a restricted degree) in rooms provided in the schools themselves. This has often interfered with the work of the teachers, but the majority have borne it without the slightest complaint, and I would like to place on record my appreciation of their forbearance and assistance.

Complaints have sometimes been made that the country is too often neglected in favour of the more populated areas, but I would like to point out that that is not correct in regard to our service. When our staff is complete and all vehicles to hand there will be seven dental officers working full-time in the country, while even the remainder of the staff who are based on Perth, will spend part of their time doing country itineraries.

We have, in fact, genuinely endeavoured to do more for outlying places than for the metropolitan area and that is reflected in the respective number of schools visited during 1950—135 in the country and 29 in and around Perth. We also try to do more for tiny schools than for the bigger ones, since at the latter an age limit is imposed as follows :—

At Class 1, 2 and 3 schools (where the attendance is over 200) only children under eight years of age are seen.

At Class 4 and 5 schools (where the attendance is between 40 and 200) children under 10 are seen.

The very small schools are those of Class 6 and 7 (where the attendance is less than 40), and at these *all* of the children are attended.

According to special circumstances which may operate, the Dental Officers are allowed to use a certain amount of discretion at the middle size schools, as it is sometimes advisable to go slightly higher than the age of 10.

When reading the foregoing it has to be realised that an age limit at large schools is absolutely necessary, otherwise a dentist might spend a year or more at one school ; however, when the men who have been recently stationed in the country are able to make regular and more frequent visits to schools placed under their control, it is hoped that they will gradually be able to take in more of the older children since, after being treated once or twice, each child will have less to do at any subsequent visit.

As usual during the past two or three years, I myself did operative work for inmates of Institutions as well as attending to the administration of our Sub-Department. In August I attended the Dental Congress which was held in Sydney and following that I inquired into the working of the School Dental Services in New South Wales, Queensland and Victoria. The whole visit was very instructive but as I have already presented a detailed paper on it I shall not dwell further upon that subject in this report.

Facts in regard to Our Work for the School Children are as follows :—

Number of country schools visited	135
Number of metropolitan schools visited	29
Number of children examined	7,857
Number of children treated (with parents' consent)	4,913
Number of children who needed no attention	1,677
Number of children who were to be done privately	477
Number of children whose parents desired no treatment	490

Operations Performed.

Silver Amalgam fillings	4,654
Copper Amalgam fillings	2,418
Cement fillings	1,609
Porcelain fillings	276
Silver Nitrate treatments	2,187
Other Conservative treatments	3,439
Extractions	13,032
Prophylaxis	670
Talks and Personal Interviews	204
X-ray examinations	6
Orthodontic Treatment	2

During school vacations, when the dentists themselves were not on leave, 12 orphanages and six Native Institutions were visited. The Managers or Superintendents of these places are always glad to see our staff, since under ordinary circumstances dental attention for any of their children means a special visit to town which might involve half or even a full day and for that time the child generally has to be in charge of an orphanage assistant who can ill be spared from his or her normal duties.

In addition to their operative work the School Dental Officer attended to the following matters :—

(1) Distributed leaflets which teach care of the teeth.

(2) Gave talks to children and adults using blackboards to provide illustrations.

(3) Showed films to the children in those schools which have 16 mm. projectors.

(4) Showed films to adults at Parents and Citizens' Association meetings.

We have eight such films and they are very popular, so we intend to increase their number. We have also had booklets printed which demonstrate a suggested course of lessons for 5th and 6th standard children, and those booklets have been distributed to all schools.

Facts about the Institutions.

Wooroloo—

Number of visits by patients to Surgery	421
Extractions	180
Fillings	53
Prophylaxis	11
New Dentures	30
Repairs to Dentures	10
Other treatments	16

Mental Hospitals—

Patients' visits	306
Extractions	222
Prophylaxis	7
New Dentures	18
Repairs to Dentures	36
Other treatments	107

Prisons—

Patients' visits	241
Extractions	162
Fillings	16
Prophylaxis	12
Other treatments	38
New Dentures	5
Repairs to Dentures	11

Inmates of prisons paid fees for any work done, and even then new dentures were not undertaken except when the people concerned were considered to need dentures in order to be able to chew their food.

In conclusion I wish to thank the professional members of our staff who have done good jobs under awkward working conditions ; also the Plant Engineer's repair shop at East Perth, the Manager and staff of which have been very helpful in the maintenance and repair of our mobile surgeries and utilities.

I also wish to thank the clerical staff of our own Department for the help they have given in many ways.

11th May, 1951.

A. G. McKENNA,
Senior Dental Officer.

APPENDIX XVII. (a).

DIPHTHERIA, 1950.

By Dr. D. J. R. Snow, Medical Officer, Department of Public Health.

172 notifications were received during the year, representing a notification rate of 30.7 per 100,000 of the population. There was thus a very slight reduction as compared with the rate for the preceding year (31.2 per 100,000).

The existing measures of diphtheria control are :—

(1) Immunisation.

(2) Prompt isolation of patients suffering from the disease.

(3) Identification and isolation of contact carriers.

Of these there can be no doubt that the first is the most important. There can also be no doubt that the explanation why a more satisfactory reduction in incidence was not achieved in 1950 is that the number of immunisations performed fell short of the target set. It has been repeatedly affirmed that the community will not be adequately covered until the annual number of immunisations equals the annual number of births, and the information available suggests that we are not as close to this target as we ought to be. A constant and unremitting immunisation effort is necessary on the part of all Local Health Authorities if a substantial further reduction in the incidence of the disease is to be effected.

Early in the year a number of features associated with the diphtheria situation commanded attention and gave cause for some concern. Whereas for several years past there had been a more or less progressive decrease in the incidence of the disease, a point had been reached whereafter the day to day notifications showed no further signs of decline. This state of affairs had persisted for several months. Further, the great majority of notifications referred to children who had not been inoculated, and this, coupled with a study of the immunisation returns submitted by the various Local Authorities gave reason to suspect that the enthusiasm of parents for immunisation was flagging. Finally, the previous cyclic behaviour of epidemic diphtheria suggested that unless a widespread and vigorous extension of immunisation was quickly accomplished a serious epidemic might overtake the child community.

It was accordingly decided to launch an intensive anti-diphtheria campaign to cover the months of April, May, and June. All the customary avenues of publicity available were utilised and it is a pleasure to record the co-operation afforded by the Press, the Broadcasting Commission, and various other bodies. Advertisements and general news articles appeared in the newspapers, slides were exhibited on the cinema screens, a series of radio talks by doctors and laymen were broadcast at intervals, posters were displayed in prominent positions, and a neon sign was erected outside the main railway station.

The initial response exceeded all expectations. The Department was inundated by enquiries connected with immunisation and there was a sudden steep rise in the demand for prophylactic by Local Authority clinics. Many hundreds of immunisations were sought and arranged in the first few weeks and the campaign promised to be an outstanding success.

Then, in a matter of days, this gain was neutralised. Parental enthusiasm abated with incredible swiftness. Everyone had become frightened about what has now come to be called "post-injection poliomyelitis," and the unfortunate manner in which the information was presented in the Press aggravated the alarm. From then on the battle was an uphill one. Despite clarifying and reassuring statements by responsible professional men it took many months for public confidence to be even partially restored, and the campaign as such proved a disappointment. It may be well to reiterate at this stage that in the absence of a poliomyelitis epidemic no undue risk is attachable to immunisation.

P.T.A.P.

During the year favourable reports of an improved Diphtheria Prophylactic appeared in the Medical Press. It purported to have several advantages over its predecessors, *e.g.*, it could be given at a very early age (six months or soon after), it was free from troublesome reactions, it provoked a high degree of immunity, and it necessitated only two attendances. The duration of the immunity conferred still remains to be conclusively determined, but there is no reason to believe that it will be shorter than the preparations hitherto in use. The Commonwealth Serum Laboratories soon commenced the manufacture of it on a large scale and supplies were obtained for trial in Perth under the supervision of the Medical Officer of Health, Perth City Council. Local experience, and experience elsewhere (both in this country and abroad) continues to be favourable, and it is the intention of the Department to sponsor its universal use during the forthcoming year.

DIPHTHERIA.

Incidence and Mortality (1911–1950).

Year.	Population (in 1,000's).	Incidence.		Mortality.	
		Cases Notified.	Rate per 100,000 population.	Number of Deaths.	Rate per 100,000 population.
1911	293	764	259·9	36	12·2
1912	305	634	207·1	28	9·1
1913	319	957	299·1	44	13·7
1914	322	785	243·7	37	11·4
1915	316	1,045	350·0	38	12·0
1916	306	757	246·0	25	8·1
1917	306	800	266·7	31	10·1
1918	310	1,277	415·1	26	8·2
1919	327	971	296·1	35	10·6
1920	331	1,080	326·0	46	13·8
1921	336	958	287·6	44	13·0
1922	345	577	167·0	22	6·3
1923	356	504	141·2	20	5·5
1924	368	511	138·7	14	3·8
1925	377	354	93·7	6	1·6
1926	385	256	66·3	11	2·8
1927	399	273	68·2	6	1·5
1928	414	639	153·6	13	3·1
1929	426	539	126·3	33	7·9
1930	431	1,045	244·4	43	10·0
1931	433	452	104·2	19	4·3
1932	436	644	147·2	20	4·5
1933	440	848	192·6	20	4·5
Mass Immunisation commenced.					
1934	442	974	220·6	36	8·1
1935	447	1,308	269·9	35	7·8
1936	451	798	175·4	36	7·8
1937	457	1,166	255·0	39	8·5
1938	462	921	199·1	41	8·8
1939	468	610	130·1	27	5·7
1940	472	583	123·3	22	4·6
1941	473	674	142·2	20	4·2
1942	479	748	156·0	41	8·5
1943	481	755	156·7	38	7·8
1944	487	528	108·3	24	4·9
1945	492	425	86·3	20	4·1
1946	498	380	76·3	11	2·2
1947	502	339	67·4	8	1·5
1948	515	255	49·5	7	1·3
1949	545	170	31·2	4	0·7
1950	560	172	30·7	7	1·25

APPENDIX XVII (b)

POLIOMYELITIS.—1950.

WESTERN AUSTRALIA.

The incidence of poliomyelitis during 1950 showed no appreciable decline over that for the preceding year. There were 59 notifications and 5 deaths. Thus although the disease has remained below epidemic level for two years, its incidence continues to be several times greater than in the years preceding the epidemic of 1948.

Its future incidence is, unfortunately, not predictable with any degree of confidence. Epidemics have been recurring in one or other state with increasing frequency in recent years, and it is not possible to say whether or when W.A. will be afflicted with another major epidemic. It seems unlikely, however, that the incidence of the disease will diminish appreciably for several years to come. The problems of control and rehabilitation, therefore, continue to present a challenge which must be faced.

Seasonal Incidence.

The disease was more frequent during the cold weather and more than 75 per cent. of all cases occurred during the 6 months April–September.

There was a progressive increase in notifications in April, May and June, and this coupled with an epidemic then raging in South Australia, gave reason for some apprehension. The increase, however, was not maintained and by summer, notifications had dropped to about one a week. The seasonal behaviour of poliomyelitis in recent years indicates that we can no longer anticipate a reduction in incidence with some change of weather and that whereas in previous times the disease was more common in warm weather it would not appear to be equally common in the cold season.

Details of the monthly incidence were as follows :—

January	2
February	2
March	1
April	5
May	8
June	11
July	7
August	6
September	8
October	4
November	4
December	1

Age Incidence.

The largest number of cases occurred in the 0–4 age group (20 out of 59), whereas in 1948 and 1949 maximal incidence was in the 5–9 age group. Over half of all the 1950 cases occurred in children under 10. The age distribution is set out as under :—

Age Group.	No. of Cases.
0– 4	20
5– 9	10
10–14	3
15–19	5
20–24	3
25–29	11
30–34	3
35–39	1
40–44	1
45–49	....
50–54	1
55 +	1

Thus although poliomyelitis is now no longer a true " Infantile Paralysis ", it is still predominantly a disease of early childhood.

Urban : Rural Incidence.

As in previous years the metropolitan area provided more cases (33) than country districts (26).

Sex Incidence.

The preponderance of males (38) over females (21) was also maintained.

Severity and Mortality.

There were five deaths. All of these were males aged 20 and over. Four were from the country and one lived on the fringe of the metropolitan area. While reporting on the 1948 epidemic attention was drawn to the heavy mortality in country males between the ages of 20 and 30. Current experience confirms that observation. Out of seven such cases four died. Several reasons can be advanced to explain this feature. The older the patient the more severe the disease. Country people are probably less immune because of fewer opportunities of acquiring immunity from small infections ; and finally, men in the country are usually engaged in occupations entailing strenuous physical exertion which is known to have an unfavourable effect on the course of the disease.

When poliomyelitis is prevalent it is therefore of great importance that young men in the country should regard the first signs of ill-health with due seriousness, and should not continue to work hard when suffering from a sore throat, fever, diarrhoea, or vomiting. These symptoms are not always due to poliomyelitis, but when they are, continued exertion may have a sinister sequel.

EPIDEMIOLOGICAL INVESTIGATION.

Detailed epidemiological investigation of each metropolitan case was undertaken during 1950. On receipt of a notification, the patient's home was visited in company with the local health inspector, the premises were inspected from the viewpoint of hygiene and sanitation, and the parents or relatives were carefully interrogated as to symptoms and development of the disease, recent movements, association with persons suffering from suspect illnesses and so on. The food and milk supplies were investigated. The prevalence of flies was assessed, the presence or absence of vermin, domestic animals and pet birds was noted and a host of other apparently unimportant data was gathered.

Speaking generally, these laborious epidemiological inquiries were fruitless. A certain amount of useful information was collected relating to precise date of onset, mode of development of symptoms, prevalence of suspect illnesses among intimates, identification of close child contacts and so on ; but little knowledge of substantial value was accumulated. As a rule the source of infection could not be traced and the mode of transmission remained a matter for conjecture. No common denominator incriminating any specific factor could be identified, and only the vague general impression of person-to-person spread through the intermediary of non-paralytic infections persisted.

During the course of these inquiries three cases of special interest came to light and are described later.

They are :—

(1) Stillbirth in a close poliomyelitis contact.
(2) Poliomyelitis in dissimilar twins.
(3) Fatal poliomyelitis in two adult brothers.

CONTROL.

The following measures of attempted control remain in operation :—

(1) Compulsory notification.
(2) Isolation of each case for a minimum period of 28 days at the Hospital for Infectious Diseases.
(3) A twenty-one day "House-and Garden " quarantine of all close and intimate contacts below the age of 15.
(4) Disinfection of the domestic sick room.
(5) Correction of any sanitary defects in the home concerned.

During times of undue prevalence the following additional measures are advised :—

(1) Public gatherings should be restricted to a minimum.
(2) Congregations of children assembling from widely separated areas should be discouraged.
(3) The operation of tonsillectomy should be held in abeyance.
(4) Unnecessary travel should be avoided.
(5) Young people who are unwell should be put to bed and examined by a doctor as soon as possible.
(6) Personal, domestic, and communal hygiene should be given particularly scrupulous attention.

STILL BIRTH AND A POLIOMYELITIS CONTACT.

On May 17th, 1950, a child (P.W., aged 2, case No. 16/50), living with her parents in a distant Perth suburb became ill with a headache, stiff neck, and fever ; and subsequently developed the full-blown clinical picture of paralytic poliomyelitis. At about the same time her brother aged eight months had had diarrhoea, and on May 13th, 1950, her sister aged three had had a headache, pain at the back of the neck, and fever, but had recovered in two days' time without evidence of any muscle weakness.

An aunt who was eight months pregnant at the time, lived about 100 yards away, and was in daily, repeated, and close contact with the patient until she was removed to hospital on May 20th, 1950.

On June 9th, 1950, this aunt commenced labour at term and after an otherwise normal parturition, gave birth to a stillborn male child.

She had had three other children—two boys aged 13 and two respectively, and a girl about eight. The course of the pregnancy had been uneventful, urine and blood pressure had been normal throughout and the W.R. was negative. She was Rh positive and her blood group was O. At no time did she complain of any constitutional or other symptoms attributable to non-paralytic poliomyelitis.

Foetal movements had not been felt since June 4th, 1950 and when examined on June 6th, 1950 no foetal heart sounds could be heard.

Post-mortem examination failed to reveal any gross abnormalities and histological examination was inconclusive.

Whether or not exposure to the virus of poliomyelitis during the terminal stage of pregnancy had any influence in determining the pre-natal death of this foetus will never be known. The association could have been a coincidence and satisfactory evidence one way or the other was impossible to obtain. Nevertheless it is known with certainty that maternal virus infeetions can damage a foetus, and the delivery of a malformed stillborn foetus by a mother, one of whose children developed paralytic poliomyelitis during the mother's eighth week of pregnancy, was placed on record during the 1948 epidemic. Examples such as this are of little scientific value but they must be most unusual and they give reason for reflection.

POLIOMYELITIS IN TWINS.

On July 3rd, 1950, a pair of nine-year old twins took ill in a Perth suburb. They were physically and temperamentally dissimilar, and of opposite sex. The boy (I.W., case 32/50), vomited, complained of a headache, was flushed, and looked generally ill. The girl (J.W.), was also " Seedy ", complained of a headache, and was troubled with a " running nose " unaccompanied by sneezing—but in two days' time, she had completely recovered. The boy's progress is set out chronologically as follows :—

3rd July, 1950—vomiting, headache, flushing, malaise.
4th July, 1950—better.
5th July, 1950—more or less well except for anorexia and some lassitude.
6th July, 1950—returned to school.
7–8th July, 1950—No complaints.
9th July, 1950—All day excursion—walked and ran about a great deal with his sister and returned home very tired.
10th July, 1950—No. complaints.
11th July, 1950—Complained of a pain in the left leg (calf) when walking—no pain at rest.
12th July, 1950—Pain in left leg severe—unable tolerate passive movement of left leg. Admitted to hospital and found to be suffering from poliomyelitis.

The rest of the family, apart from the mother and father, consisted of three girls, E., aged 15 ; M. aged 11 and E. aged six. The two former were and had been quite well. The last had had fever and had vomited on 10th July, 1950 (one week after onset of symptoms of illness in the twins), but was well the next day and has remained well.

Multiple paralytic and non-paralytic disease in families occurs from time to time. Multiple symptomless infections (as demonstrated by intra-cerebral inoculation of monkeys with faeces from members of a household), is common. The question of familial predisposition, however, has not yet been settled and the matter of individual susceptibility is an unopened book. It is therefore interesting to note the simultaneous onset of symptoms in dissimilar twins—only one of whom developed poliomyelitic paralysis. It is tempting to imagine what might have happened had they been identical twins.

SIMULTANEOUS FATAL POLIOMYELITIS IN BROTHERS.

The occurrence of poliomyelitis virus infection simultaneously in two or more members of one family is common enough. It suggests simultaneous exposure to infection. The simultaneous development of paralytic poliomyelitis of similar distribution and comparable severity in two brothers, however, must be unusual, and is therefore, worth reporting.

The cases originated on a mixed farm in the extreme South-West of the State during the middle of October. For about a week prior to the onset of symptoms, the brothers had been engaged in carrying out renovations to their shearing shed. On the afternoon of 19th October, 1950, each brother complained of a headache, stiff neck, and pains in the legs, and both of them vomited. The younger brother (aged 20), stopped work at 5 p.m., while the elder brother (aged 27), continued until 9 p.m. The following day both experienced some difficulty voiding urine, and both noticed weakness in the legs. By the 22nd, i.e., on the fourth day of the disease, in both cases, the lower limbs were completely paralysed and there was some symmetrical weakness in both upper limbs. They were then transported by motor ambulance to Perth—a tiring journey of over 200 miles. Both patients arrived in a state of exhaustion, and during the latter part of the journey the elder brother developed difficulty in breathing.

On examination they were found to have paralysis of comparable severity and similar distribution, i.e., almost total paralysis of the lower limbs and abductor—extensor weaknesses in the upper limbs. The only difference was that the elder brother had, in addition, multiple intercostal weakness which subsequently necessitated the use of an artificial respirator. About 17 hours after he had been put into the machine his condition suddenly deteriorated and he died with signs suggestive of myocardial failure. Soon afterwards the younger brother's condition rapidly deteriorated and he developed pneumonia and also succumbed.

In the report of 1948 epidemic, attention was drawn to the marked severity of the disease in young men from rural areas employed in a strenuous occupations. In general older patients fare worse than younger ones, people from the country fare worse than people from the city, and people in vigorous occupations fare worse than sedentary workers. The case of the two brothers illustrates all these points.

APPENDIX XVIII.

A RECORD OF THE SPREAD OF AN EPIDEMIC OF INFECTIVE HEPATITIS IN WESTERN AUSTRALIA, 1950.

By Dr. J. C. Edwards, Department of Public Health.

Infective hepatitis or epidemic catarrhal jaundice is a virus disease spread by droplet infection or by contamination with the excreta of an infective person. It has a low mortality rate, but some cases terminate fatally with hepatic necrosis. It has an unusually long incubation period of from 20 to 40 days. This is well illustrated in the present epidemic which did not reach its zenith until 1951. The evidence given below suggests that the environment existing on board crowded ships is particularly favourable to the spread of this disease, presumably because the virus is present in the vomitas of infected persons. All the early cases of this disease can be traced to some ship entering Fremantle harbour. The majority of these cases were among immigrants recently landed in Australia.

In 1949 there were eight instances of the disease in Western Australia. In 1950 one case was notified in the first week of January (diagnosed 29th December, 1949). This patient was an immigrant who arrived on board S.S. " Cheshire " in 1949. The second case was diagnosed in an immigrant at Northam Camp on 21st March, who had landed in Australia from the " Fair Sea " on the 2nd of that month. On the 29th May the disease was diagnosed in a migrant at Cunderdin Camp. As this patient had arrived in Australia nine months previously, the infection must have come from an undiagnosed case within the camp. In June two cases were diagnosed at the Northam Camp, one on the seventh and one on the 14th.

On the 26th June the disease was diagnosed in a patient who was a university student at the time. It was not possible to demonstrate contact between this case and the other cases notified previously. On the 11th of July his two sisters contracted the disease. At Cunderdin Camp there were two further cases, one on the 26th of June and the 4th July. In accordance with the long incubation period of the disease, these cases presumably contracted the disease from the first case diagnosed at Cunderdin. Another case was diagnosed in Perth on the 21st July. This patient could not be shown to be a contact with any previous cases. On the 31st July the disease was diagnosed in a patient who was an almoner at the Children's Hospital at Melbourne. She was at the time travelling on S.S. " Maloja." It appears that this case was from an infection outside Western Australia.

On 1st August a child of 12 was admitted to the Princess Margaret Hospital and diagnosed by a member of the staff who was later to suffer similarly himself. This case is interesting in that it was the first case to occur in the hospital, which was later to form a focus of the infection. The boy sold newspapers in the street. The habit which these boys develop of holding coins between their lips suggests an obvious means of introducing the virus into their alimentary tract.

In September the disease was diagnosed in an immigrant residing at the Railway Camp at Harvey and in a child at Claremont Mental Hospital. Late in the month the disease was notified in a patient residing in a boarding house at Norseman. This is the first case outside Perth and the Immigration camps.

In October there were two cases among the trainee nurses of the Princess Margaret Hospital. A case occurred at Northam in a patient who had arrived in Australia on board the " Skaugum " two days earlier. This is obviously an example of further infection being introduced into the State by the migrant vessels.

In November two further cases occurred among residents of the Norseman boarding house. There were two cases among the staff on the Princess Margaret Hospital and two in other parts of Perth. In December there were three cases in Perth, two of which were among the staff of the Princess Margaret Hospital, one in Norseman outside the original boarding house, and one in Clontarf Boy's Town.

In 1950 there were 36 cases in all.

J. C. EDWARDS.

APPENDIX XIX.

WESTERN AUSTRALIA.

DERBY LEPROSARIUM.

Admissions and Discharges for the Year 1950, *compiled from Monthly Returns of the Superintendent.*

Months of Year 1950.	Admissions.							Discharges.											Inmates Remaining in Leprosarium.		
	Male.			Female.			Total Admitted.	Male.					Female.						Male.	Female.	Total Remaining.
	Admitted.	Re-admitted.	Total Males.	Admitted.	Re-admitted.	Total Females.		Discharged Cured.	Deceased.	Absconded.	Discharged Non-infcctious.	Total Males Discharged.	Discharged Cured.	Deceased.	Absconded.	Discharged Non-infectious.	Total Females Discharged.	Total Discharged.			
January	1	....	1	1	....	1	2	....	....	....	....	....	....	2	....	....	2	2	163	106	269
February	2	....	2	1	....	1	3	....	....	1	....	1	....	....	....	....	....	1	164	107	271
March	1	....	1	2	....	2	3	....	....	....	....	....	1	2	2	....	5	5	165	104	269
April	1	....	1	1	....	1	2	....	....	....	....	....	....	....	....	....	....	....	166	105	271
May	....	....	....	....	....	....	....	3	....	....	....	3	....	....	....	....	....	3	163	105	268
June	....	....	....	....	....	....	....	....	2	....	....	2	2	1	....	....	3	5	161	102	263
July	5	....	5	2	....	2	7	....	....	....	....	....	1	....	....	....	1	1	166	103	269
August	1	....	1	1	....	1	2	....	....	....	....	....	....	....	....	....	....	....	167	104	271
September	6	1	7	7	1	8	15	....	....	....	....	....	....	....	....	....	....	....	174	112	286
October	1	1	2	2	....	2	4	....	....	....	....	....	....	....	....	....	....	....	176	114	290
November	6	....	6	5	2	7	13	....	....	....	....	....	....	....	....	....	....	....	182	121	303
December	5	....	5	2	....	2	7	....	2	2	....	4	1	....	....	....	1	5	183	122	305
Total	29	2	31	24	3	27	58	3	4	3	....	10	5	5	2	....	12	22	....	....	....

Analysis of Admissions and Discharges during Year 1950.

Inmates as at 31st December, 1949	*269
Admissions for period ended 31st December, 1950	58
Discharges for period ended 31st December, 1950	8
Deaths for period ended 31st December, 1950	*9
Absconded for period ended 31st December, 1950	5
Total Remaining in Leprosarium as at 31st December, 1950	305

*Only male omitted 1949 and included in January, 1950, Return. Absconded in 1949 shortly after admission.

APPENDIX XX.

VITAL STATISTICS.

WESTERN AUSTRALIA.

——	1948.	1949.	1950.
Mean Population—			
Males	264,319	273,888	287,152
Females	250,524	259,195	271,557
TOTAL	514,843	533,083	558,709
Births—			
Males	6,664	6,826	7,293
Females	6,267	6,685	6,935
Total	12,931	13,511	14,228
Birth Rate—Rate per 1,000 of Mean Population	25·12	25·35	25·47
Deaths—			
Males	2,797	2,893	3,022
Females	1,888	1,897	2,036
TOTAL	4,685	4,790	5,058
Death Rate—Rate per 1,000 of Mean Population	9·10	8·99	9·05
Natural Increase—Rate per 1,000 of Mean Population	16·02	16·36	16·42
Infant Mortality—Rate per 1,000 Live Births—			
Metropolitan Area	22·58	21·53	25·41
Rest of State	28·78	31·56	28·83
Whole State	25·60	26·42	27·13
Stillbirths—			
Metropolitan Area	136	119	121
Whole State	266	268	240

COMPARISON OF INFANT MORTALITY AND GENERAL DEATH RATE.

Place.	Infant Mortality.			General Death Rate.		
	1948.	1949.	1950.	1948.	1949.	1950.
New Zealand (a)	21·93	23·66	22·75	9·13	9·05	9·27
Western Australia	25·60	26·42	27·13	9·10	8·99	9·05
New South Wales	30·30	27·29	27·06	10·04	9·43	9·60
Victoria	23·93	21·89	20·09	10·44	10·28	10·14
Queensland	27·96	24·72	24·73	9·31	8·85	8·82
Tasmania	27·65	23·91	23·75	9·55	8·76	8·74
South Australia	29·74	27·68	24·04	10·25	9·45	9·63

(a) Non Maori.

APPENDIX XXI.

NOTIFICATION OF EACH TYPE OF INFECTIOUS DISEASE RECEIVED BY THE DEPARTMENT OF PUBLIC HEALTH FOR EACH WEEK OF THE YEAR ENDED 31ST DECEMBER, 1950.

Week of Year.	Amoebiasis.	Amoebic Dysentery.	Ankylostomiasis.	Bacillary Dysentery.	C.S.M.	Dengue Fever.	Diphtheria.	Enteric Fever and Salmonella Infections.	Encephalitis Lethargic.	Encephalitis Virus.	Hepatitis Infective or Ep. Catt. Jaundice.	Infantile Diarrhoea.	Leprosy.	Malaria.	Poliomyelitis.	P.T.B.	Other T.B.	Puerperal Fever	Purulent Ophthalmia.	Rubella.	Scarlet Fever	Tetanus.	Typhoid Fever.	Typhus Fever.	Undulent Fever.
1	....	....	....	....	2	....	3	....	....	....	2	....	....	....	....	8	....	....	....	....	....	....	....	....	....
2	2	1	3	....	....	....	4	....	1	....	2	....	....	....	....	15	....	....	1	....	2	....	....	1	....
3	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1	16	....	....	....	2	4	....	....	....	....
4	....	....	....	3	....	....	1	....	....	....	....	....	....	....	1	5	1	....	....	1	4	1	....	....	....
5	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	14	....	....	....	....	1	....	....	1	....
6	....	....	....	....	2	....	4	....	....	....	....	....	2	....	....	8	....	....	1	1	6	....	1	....	....
7	2	1	3	....	....	....	3	1	....	....	....	....	2	....	....	15	1	....	....	1	7	....	....	1	....
8	....	....	....	2	....	....	2	1	....	....	....	....	....	....	....	17	1	....	....	....	3	....	1	1	1
9	....	....	....	....	2	....	4	....	....	1	1	1	....	....	2	7	....	....	1	2	2	....	....	1	....
10	....	....	....	....	....	....	1	....	....	....	....	....	3	....	....	11	....	....	....	3	4	....	2	....	....
11	....	....	....	1	2	....	3	....	....	....	....	....	....	....	1	1	....	....	....	1	1	....	1	4	....
12	....	....	....	3	....	....	3	1	....	....	....	....	....	....	....	26	1	....	8	....	5	....	....	....	....
13	....	....	....	4	....	....	3	....	....	1	....	....	....	....	....	14	....	....	....	....	2	1	....	2	....
14	1	1	4	....	....	1	3	....	....	....	....	....	....	1	1	10	....	....	....	....	3	....	....	....	....
15	....	....	....	....	1	....	4	....	....	....	....	....	3	....	....	7	1	....	....	....	4	....	....	3	....
16	....	....	....	....	....	....	2	....	....	....	....	....	....	....	2	14	....	....	....	....	2	....	....	3	....
17	....	....	....	....	1	....	1	....	....	1	....	....	....	....	2	6	....	....	3	1	5	....	....	2	....
18	2	....	4	....	....	....	8	....	....	....	....	1	2	7	1	20	....	....	....	1	4	1	....	....	....
19	....	....	....	....	....	....	6	....	....	....	....	....	....	1	1	12	....	....	....	1	5	1	....	1	....
20	....	....	....	1	....	....	3	....	....	....	....	....	....	....	4	8	....	....	....	....	4	....	....	1	....
21	....	....	....	....	1	....	3	....	....	....	....	1	....	....	2	17	....	....	....	1	....	....	....	1	....
22	2	1	4	6	1	....	3	....	....	....	....	....	....	2	2	16	....	1	....	1	5	....	....	2	....
23	....	....	....	....	....	....	1	....	....	....	....	....	....	....	3	5	1	....	....	2	3	1	....	....	1
24	....	....	....	....	....	....	3	2	....	....	3	....	....	....	1	9	....	....	....	....	6	....	....	....	....
25	....	....	....	3	....	....	4	....	....	....	....	....	....	....	3	8	....	....	....	2	2	....	....	1	....
26	....	....	....	1	2	....	2	....	....	....	1	....	....	....	2	4	....	....	....	....	1	5	....	....	1
27	....	1	4	1	....	....	4	....	....	....	3	....	....	....	1	12	....	....	....	3	3	....	....	....	....
28	....	....	....	....	4	....	4	....	....	....	2	....	....	....	4	16	1	....	....	....	3	....	....	....	....
29	....	....	....	....	....	....	5	....	....	....	1	....	....	....	....	12	....	....	....	2	2	....	....	....	....
30	....	....	....	....	1	....	6	....	....	....	....	....	....	....	2	24	1	....	....	2	9	....	....	1	....
31	2	....	5	5	....	....	3	....	....	....	....	....	....	....	2	7	....	....	....	....	3	....	....	....	1
32	....	....	1	3	1	....	2	....	....	....	1	....	7	....	1	5	....	....	....	1	6	....	....	....	1
33	....	....	....	....	....	....	6	....	....	....	1	....	....	....	1	11	....	....	....	1	4	....	....	....	....
34	....	....	....	1	1	....	6	....	....	....	....	....	....	....	2	21	....	....	....	....	3	....	....	....	....
35	....	....	....	....	....	....	7	....	....	....	....	....	....	....	....	11	....	....	....	5	3	....	....	....	....
36	....	....	....	1	....	....	2	....	....	....	2	1	2	1	1	2	....	....	....	1	3	....	....	1	1
37	....	....	1	....	....	....	1	....	....	....	1	....	....	....	2	16	....	....	....	1	3	....	....	....	....
38	....	....	....	1	1	....	1	....	....	....	....	....	....	....	3	11	2	....	....	....	1	....	....	....	....
39	....	....	....	1	....	....	3	....	....	1	....	....	....	....	2	8	....	....	....	2	4	....	....	1	....
40	....	....	....	1	....	....	3	....	....	1	1	....	....	....	....	12	1	....	....	1	6	....	....	....	....
41	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	13	1	....	....	1	1	1	....	....	....
42	....	....	....	1	1	....	2	....	....	....	....	....	15	....	....	5	....	....	....	....	5	....	....	....	....
43	....	....	99	2	....	....	6	....	....	....	1	....	....	....	4	11	2	....	....	....	5	....	....	....	....
44	1	....	2	....	1	....	2	....	....	....	1	....	....	....	....	12	1	....	....	1	6	....	....	1	....
45	1	....	....	....	....	....	5	....	....	....	....	....	4	....	2	13	....	....	....	....	8	....	....	1	1
46	....	....	2	....	....	....	4	....	....	....	3	....	....	1	....	10	....	....	....	....	7	....	1	....	....
47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	11	1	....	....	1	5	....	....	1	....
48	1	....	....	....	....	....	6	....	....	....	4	....	13	....	1	6	....	....	....	3	7	....	....	1	....
49	....	....	....	....	....	....	1	....	....	...	1	....	....	....	....	11	2	....	....	....	....	....	....	....	....
50	....	....	....	....	....	....	2	....	....	....	1	....	7	....	....	7	....	1	....	....	4	....	....	....	....
51	....	....	....	3	....	....	4	....	....	....	....	....	....	....	1	14	....	....	....	....	6	....	1	....	....
52	....	....	....	1	....	....	8	1	....	....	4	....	....	....	....	12	....	....	....	....	6	....	....	....	....
Total	14	5	132	45	24	1	172	6	1	5	36	4	60	15	59	586	18	2	14	45	198	11	7	32	7

APPENDIX XXII.

INCIDENCE AND MORTALITY OF NOTIFIABLE INFECTIOUS DISEASES, 1950.

Diseases Notifiable.	Cases Reported.	Deaths. (*a*)
Amoebiasis	14	....
Amoebic Dysentery	5	....
Ankylostomiasis	132	....
Bacillary Dysentery	45	1
C.S.M.	24	5
Dengue Fever	1	....
Diphtheria	172	7
Enteric Fever and Salmonella Infections	6	....
Encephalitis Lethargic	1	....
Encephalitis Virus	5	2
Hepatitis Infective or Ep. Catt. Jaundice	36	4
Infantile Diarrhoea	4	26 (*b*)
Leprosy	60	....
Malaria	15	1
Poliomyelitis	59	5
P.T.B.	586	125
Other T.B.	18	3
Puerperal Fever	2	....
Purulent Ophthalmia	14	....
Rubella	45	....
Scarlet Fever	198	....
Tetanus	11	6
Typhoid Fever	7	1
Typhus Fever	32	....
Undulent Fever	7	....

(*a*) Excluding Full Blood Aboriginals, (*b*) Diarrhoea and Enteritis under two years.

APPENDIX XXIII.

TABLE SHOWING THE INCIDENCE OF INFECTIOUS DISEASES IN EACH STATISTICAL DISTRICT FOR THE YEAR ENDED 31ST DECEMBER, 1950.

Statistical Districts.	Amoebiasis.	Amoebic Dysentery.	Ankylostomiasis.	Bacillary Dysentery.	C.S.M.	Dengue.	Diphtheria.	Enteric and Salmonella.	Encephalitis Lethargica.	Encephalitis Virus.	Hepatitis Ep. Cat. Jaundice.	Infantile Diarrhoea.	Leprosy.	Malaria.	Poliomyelitis.	P.T.B.	Other T.B.	Puerperal Fever.	Purulent Ophthalmia.	Rubella.	Scarlet Fever	Tetanus (Lockjaw).	Typhoid Fever.	Typhus Fever.	Undulant Fever.
Albany Municipal Council	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	4	....	....	....	1	1	1	....	....	....
Armadale-Kelmscott	....	....	....	....	....	....	3	....	....	....	....	....	....	....	2	6	2	....	....	....	2	....	....	....	....
Ashburton	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Augusta-Margaret River	....	....	....	....	1	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	1	....	....	....	....
Bassendean	....	....	....	....	....	....	6	....	....	....	....	....	....	....	....	6	....	....	....	....	1	....	....	....	....
Bayswater	....	....	....	1	2	....	3	....	....	....	....	....	....	....	1	5	....	....	....	1	....	1	1	1	....
Belmont Park	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	6	....	....	....	....	3	1	....	....	....
Beverley	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	2	....	....	....	....	....	....	....	....	....
Boulder	....	....	....	....	1	....	1	....	....	....	....	....	....	....	1	12	....	....	....	....	....	....	....	....	....
Bridgetown	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	3	....	....	1	....
Broome	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....
Broomehill	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Bruce Rock	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Bunbury Municipality	....	....	....	....	....	....	5	....	....	....	....	....	....	....	2	3	....	....	....	....	4	....	....	1	....
Bunbury Road Board	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Busselton	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
Canning	....	....	....	3	1	....	....	....	....	....	1	....	....	....	....	7	....	....	....	....	1	....	....	....	....
Capel	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Carnarvon	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Chittering	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Claremont	....	....	....	....	2	....	7	....	....	1	....	....	....	....	2	10	1	....	....	....	8	....	....	2	1
Collie Municipality	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	2	....	....	....	....	1	....	....	1	....
Coolgardie	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Corrigin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Cottesloe	....	....	....	9	2	....	5	....	....	1	....	....	....	....	....	10	....	....	....	2	4	....	....	2	....
Cranbrook	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....
Cuballing	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cue	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....
Cunderdin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Dalwallinu	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....
Darling Range	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	4	1	....	....	....	....	....	....	....	....
Denmark	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....
Dumbleyung	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....
Dundas	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	6	....	....	....	....	....	....	....	....	....
Fremantle Municipality....	....	....	....	....	....	....	15	....	....	....	1	....	....	....	....	15	2	....	....	2	5	1	....	5	....
Fremantle Road Board	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	2	....	....	....	....	1	....	1	1	....

Fremantle East	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	3	....	....	....	1	1	....	....	....	....
Fremantle North	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....
Gnowangerup	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Goomalling	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....
Gosnells	....	....	....	....	....	....	2	1	....	....	1	....	....	....	....	5	....	....	....	2	3	....	....	2	1
Guildford	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	2	....	....	....	....
Harvey	....	....	....	....	....	....	1	....	....	1	....	....	....	....	2	5	....	....	....	....	....	....	....	....	....
Kalgoorlie Municipality	....	....	....	....	2	....	3	....	....	....	....	....	....	....	3	16	....	....	....	1	10	....	....	....	....
Kalgoorlie Road Board	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	....	....	....	....	1	....	....	....	....
Katanning	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	3	....	....	....	....	3	....	....	1	....
Kellerberrin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	1	....	....	....	....
Kojonup	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	1	....	....	....
Koorda	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	....
Kununoppin-Trayning	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	1	....	....	....	....
Lake Grace	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....
Leonora	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Mandurah	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Marradong	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Meekatharra	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1
Melville	....	....	....	....	....	....	3	....	....	....	....	....	....	....	1	8	1	....	....	....	2	1	....	....	....
Menzies	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Merredin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Midland Junction	....	....	....	....	1	....	5	....	....	....	....	....	....	....	....	8	....	....	....	....	....	....	....	3	....
Moora	....	....	....	....	1	....	4	....	....	....	....	....	....	....	1	1	....	....	....	....	3	....	....	....	....
Morawa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....
Mosman Park	....	....	....	....	....	....	2	....	....	....	....	....	....	....	1	10	1	....	....	3	6	....	....	....	....
Mt. Magnet	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Mukinbudin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Mullewa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Mundaring	....	....	....	3	....	....	2	....	....	....	1	1	....	....	2	5	1	....	....	1	....	....	....	....	....
Murray	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Narembeen	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....
Narrogin Municiaplity	....	....	....	....	1	....	1	....	....	....	....	1	....	....	1	1	....	....	....	1	2	....	....	....	....
Narrogin Road Board	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
Nedlands	....	....	....	....	....	....	7	....	....	....	1	....	....	....	1	21	....	....	....	2	18	....	1	1	....
Northam Municipality	....	....	....	....	1	....	1	....	....	....	....	....	....	....	1	7	....	....	....	1	1	....	....	....	....
Northam Road Board	....	....	....	2	....	....	2	....	....	....	....	....	....	....	3	3	....	....	....	....	20	....	....	....	....
Northampton	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Peppermint Grove	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	2	....	....	....	1	....
Perth Municipality	....	....	....	4	3	....	39	2	....	....	9	1	....	....	10	172	3	....	....	13	52	....	1	6	1
Perth Road Board	....	....	....	....	....	....	9	....	....	1	1	....	....	....	6	43	1	....	....	6	11	1	....	2	....
Plantagenet	....	....	....	....	....	....	1	....	....	....	....	....	....	....	2	2	....	....	....	....	....	....	....	....	....
Port Hedland	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Quairading	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	1	....	....
Rockingham	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Serpentine-Jarrahdale	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....
South Perth	....	....	....	....	2	....	3	....	....	....	....	....	....	....	2	20	....	....	....	1	9	....	....	1	....
Subiaco	....	....	....	3	....	....	8	....	....	....	8	....	....	....	3	22	1	....	....	2	9	2	....	1	1
Sussex	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Swan	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	3	1	....	....	....	....	....	....	....	....
Tableland	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Toodyay	....	....	....	7	....	....	1	....	....	....	....	....	....	....	1	1	....	....	6	....	1	....	....	....	....
Three Springs	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Victoria Plains	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Wagin Municipality	....	....	....	1	2	....	1	....	....	....	....	....	....	....	1	3	....	....	....	....	....	....	....	....	....

APPENDIX XXIII—*continued.*

Table showing the Incidence of Infectious Diseases in Each Statistical District for the Year ended 31st December, 1950.—*continued.*

Statistical Districts.	Amoebiasis.	Amoebic Dysentery.	Ankylostomiasis.	Bacillary Dysentery.	C.S.M.	Dengue.	Diphtheria.	Enteric and Salmonella.	Encephalitis Lethargica.	Encephalitis Virus.	Hepatitis Ep. Cat. Jaundice.	Infantile Diarrhoea.	Leprosy.	Malaria.	Poliomyelitis.	P.T.B.	Other T.B.	Puerperal Fever.	Purulent Ophthalmia.	Rubella.	Scarlet Fever	Tetanus (Lockjaw).	Typhoid Fever.	Typhus Fever.	Undulant Fever.
West Kimberley	....	....	....	....	....	....	....	....	....	....	....	....	60	1	....	5	....	....	....	....	....	....	1	....	....
Wickepin	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Wiluna	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
Wongan-Ballidu	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
Wyalkatchem	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	5	....	....	....	....	....	....
Wyndham	1	....	101	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....
Yilgarn	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....
York Municipality	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....
York Road Board	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
Contracted outside State	....	....	2	10	....	....	....	1	....	1	9	....	....	12	....	52	1	....	....	....	....	....	1	....	1
Services	13	5	29	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....
Total	14	5	132	45	24	1	172	6	1	5	36	4	60	15	59	586	18	2	14	45	198	11	7	32	7

APPENDIX XXIV.

VENEREAL DISEASE IN WESTERN AUSTRALIA, 1949-1950.

Disease.	Male.		Female		Total.	
	1949.	1950.	1949.	1950.	1949.	1950.
Syphilis—						
Primary	8	8	1	2	9	10
Secondary	3	1	....	2	3	3
Tertiary	8	7	9	4	17	11
Congenital	2	2	....	3	2	5
Total Syphilis	21	18	10	11	31	29
Gonorrhoea	241	237	31	35	272	272
Chancroid	1	1	....	....	1	1
Granuloma	*3	*7	*7	*13	*10	*20
Total	266	263	48	59	314	322

* Natives.

APPENDIX XXV.

MATERNAL MORTALITY.

Year.	Live Births.	Deaths from							
		Puerperal Septicaemia.		Abortion.		All Other Causes of the Puerperal State.		All Causes of the Puerperal State.	
		No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
1943	10,481	3	0·29	3	0·29	17	1·62	23	2·19
1944	10,870	4	0·37	5	0·46	18	1·66	27	2·48
1945	10,672	2	0·19	5	0·47	13	1·22	20	1·87
1946	12,105	3	0·25	5	0·41	18	1·49	26	2·15
1947	12,874	2	0·16	8	0·62	22	1·71	32	2·49
1948	12,981	6	0·46	1	0·08	12	0·93	19	1·47
1949	13,511	2	0·15	3	0·22	11	0·81	16	1·18
1950	14,228	....	....	1	0·07	12	0·84	13	0·91

All rates per thousand live births.

APPENDIX XXVI.

MEAT INSPECTION FOR THE YEAR ENDING 31ST DECEMBER, 1950.

CARCASES CONDEMNED.

No. of Animals Slaughtered.		Emaciation.	Icterus.	Immaturity.	Moribund.	Piroplasmosis.	Unmarketable.	Pyrexia.	Gangrene.	Pleuro-Pneumonia.	Sepsis.	Truamatism.	Tuberculosis.	Actinomycosis.	Peritonitis.	Caseous-Lymphadenitis.	Paratyphoid.	Totals.
FREMANTLE DISTRICT (INCLUDING WATSONS BACON FACTORY).																		
Cattle	16,492	75	....	....	2	10	....	4	10	3	5	14	54	....	....	....	....	177
Calves	790	....	....	1	....	....	1	1	....	....	....	....	....	....	....	....	....	3
Sheep	130,061	39	3	....	4	....	2	18	2	....	2	2	....	....	....	4	....	76
Pigs	57,626	2	4	....	....	....	15	20	....	....	29	1	139	....	21	....	30	261
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	517
MIDLAND JUNCTION (INCLUDING FOGGITT JONES BACON FACTORY).																		
Cattle	32,477	20	....	....	4	8	....	6	19	....	8	10	256	2	....	....	....	333
Calves	35,000	1	....	1	....	....	1	....	....	....	1	1	....	....	....	....	....	5
Sheep	422,960	1,120	28	....	122	....	6	19	....	1	13	3	....	....	....	1	....	1,213
Pigs	34,945	....	4	....	....	....	1	....	....	....	1	....	84	....	....	....	4	94
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1,645
KALGOORLIE DISTRICT.																		
Cattle	2,222	....	....	....	....	....	....	....	....	....	....	....	7	....	....	....	....	7
Calves	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	15,709	1	3	....	1	....	1	....	....	....	....	....	....	....	....	....	....	6
Pigs	475	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	1	3
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	16
FREMANTLE MEAT MARKETS.																		
Cattle	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Calves	982	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	4
Sheep	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	64½	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	4	5
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9
COUNTRY DISTRICTS—Albany, Busselton, Collie, Bunbury, Geraldton, Narrogin, Wagin, York, Rockingham, Northam and Katanning.																		
Cattle	12,920	3	2	....	5	....	13	3	....	....	26	2	9	....	....	....	....	63
Calves	2,712	....	....	209	....	....	1	....	....	....	....	....	....	....	....	....	....	210
Sheep	117,144	958	4	....	24	....	70	7	....	....	7	9	....	....	....	....	....	1,079
Pigs	4,802	....	....	....	....	....	1	5	....	....	1	1	8	....	....	....	....	16
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1,368
PERTH CITY MARKETS.																		
Cattle	203	....	....	....	....	....	7½	....	....	....	....	....	....	....	....	....	....	7½
Calves	18,470	....	1	142	....	....	79	....	....	....	....	11	....	....	....	....	....	232
Sheep	132	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	216	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	4
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	243½

PART CARCASES CONDEMNED.

No. of Animals Slaughtered.		Abscess.	Actinomycosis.	Caseous-Lymphadenitis.	Tuberculosis.	Arthritis.	Unmarketable.	Traumatism.	Totals.
FREMANTLE DISTRICT (INCLUDING WATSONS BACON FACTORY).									
Cattle	16,492	16	207	....	60	....	29	8	320
Calves	790	....	....	....	....	....	....	....	....
Sheep	130,061	....	....	43	....	15	....	1	59
Pigs	57,626	1,967	....	....	....	....	....	16	1,983
		....	....	....	....	....	....	....	2,362*
MIDLAND JUNCTION (INCLUDING FOGGITT JONES BACON FACTORY).									
Cattle	32,477	4	271	....	180	....	2	27	484
Calves	35,000	....	....	....	....	....	....	....	....
Sheep	422,960	1	....	49	....	97	2	1	150
Pigs	34,945	12	....	....	92	6	1	3	114
		....	....	....	....	....	....	....	748
KALGOORLIE DISTRICT.									
Cattle	2,222	4	11	....	17	....	3	....	35
Calves	41	....	....	....	....	....	....	....	....
Sheep	15,709	....	....	8	....	3	1	....	12
Pigs	475	....	....	....	....	....	1	1	2
		....	....	....	....	....	....	....	49
FREMANTLE MEAT MARKETS.									
Cattle	15	....	....	....	....	....	....	....	....
Calves	982	....	....	....	....	....	....	....	....
Sheep	1	....	....	....	....	....	....	....	....
Pigs	64½	....	....	....	....	....	....	1	1
		....	....	....	....	....	....	....	1
COUNTRY DISTRICTS—Albany, Busselton, Collie, Bunbury, Geraldton, Narrogin, Wagin, York, Rockingham, Northam and Katanning.									
Cattle	12,920	5	21	....	16	....	1	12	55
Calves	2,712	....	....	....	....	....	....	....	....
Sheep	117,144	29	....	47	....	32	4	1059	1,171
Pigs	4,802	12	....	....	36	....	3	7	58
		....	....	....	....	....	....	....	1,284
PERTH CITY MARKETS.									
Cattle	203	....	....	....	....	....	....	....	....
Calves	18,470	....	....	....	1	....	....	....	1
Sheep	132	....	....	....	....	....	....	....	....
Pigs	216	....	....	....	....	....	....	....	....
		....	....	....	....	....	....	....	1

* Malignancy.

ORGANS CONDEMNED.

No. of Animals Slaughtered.		Abscess.	Actinomycosis.	Angiomatosis.	Cirrhosis.	Fatty Infiltration.	Hydronephrosis.	Hydatitids.	Melanosis.	Necrosis.	Pericarditis.	Pleuro-Pneumonia.	Tuberculosis.	Unmarketable.	Parasitic.	Totals.
FREMANTLE DISTRICT (INCLUDING WATSONS BACON FACTORY).																
Cattle	16,492	269	7	240	3	85	....	154	1	....	29	....	8	....	....	796
Calves	790	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	130,061	2	....	....	....	....	....	2,244	....	....	....	....	....	....	....	2,246
Pigs	57,626	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	3,042
MIDLAND JUNCTION (INCLUDING FOGGITT JONES BACON FACTORY).																
Cattle	32,477	414	289	476	138	107	92	163	1	....	55	68	469	....	....	2,352
Calves	35,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	422,960	70	....	18	....	....	....	279	....	....	....	....	....	44	....	411
Pigs	34,945	....	....	....	....	12	5,684	201	....	2487	23	....	....	....	....	8,407
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	11,170
KALGOORLIE DISTRICT.																
Cattle	2,222	21	13	3	6	177	1	23	19	....	5	....	37	507	10	746
Calves	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	15,709	....	....	....	....	....	12	501	....	....	....	....	....	35	....	548
Pigs	475	....	....	....	....	....	....	....	....	12	....	....	....	....	2	14
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	1,308
FREMANTLE MEAT MARKETS.																
Cattle	15	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2
Calves	982	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2
Sheep	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	64½	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	4
COUNTRY DISTRICTS—Albany, Busselton, Collie, Bunbury, Geraldton, Narrogin, Wagin, York, Rockingham, Northam and Katanning.																
Cattle	12,920	94	57	92	24	36	....	....	4	....	....	....	40	41	111	499
Calves	2,712	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	117,144	185	....	65	61	86	....	....	100	29	....	....	....	111	1,957	2,594
Pigs	4,802	23	....	....	25	....	....	....	29	239	....	....	13	109	515	953
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	4,046
PERTH CITY MARKETS.																
Cattle	203	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Calves	18,470	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	132	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	216	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

TOTALS OF ANIMALS SLAUGHTERED.—Cattle 64,329 ; Calves 26,495 ; Sheep 686,007 ; Pigs 98,128½

Total Animals Slaughtered and Inspected in Country Districts where Meat Inspection is Carried Out.

District.	Cattle.	Sheep.	Calves.	Pigs.	Total.
Albany	2,225	44,074	674	2,135	49,108
Busselton	888	4,309	104	223	5,534
Collie	1,551	8,315	79	320	10,265
Bunbury	1,899	11,817	803	748	15,267
Geraldton	1,458	17,966	641	99	20,164
Narrogin	976	5,419	84	206	6,685
Wagin	371	2,604	12	17	3,004
York	489	2,894	56	123	3,562
Rockingham	376	2,795	24	24	3,219
Northam	1,719	11,960	148	832	14,659
Katanning	968	4,991	87	75	6,121
Total	12,920	117,144	2,712	4,802	137,578

Ex CHAMBERS, MIDLAND JUNCTION.

	Part Carcases Condemned.			Organs Condemned.	
	Traumatism.	Putrefaction.	Unmarketable.	Putrefaction.	
Cattle	4	7	6	....	....
Sheep	....	....	166	247	....

APPENDIX XXVII.

REVENUE AND EXPENDITURE FOR YEAR 1950.

Revenue.

	£	s.	d.
License Fees	40	0	0
Meat Inspection Fees	7,690	15	9
Fish Inspection Fees	359	4	7
Pathological Laboratory	869	14	0
Sanitation Refunds	164	1	11
Inspection of Plans (Septic Tanks)	2,203	1	0
Miscellaneous	5,044	1	5
Nurses and Midwives' Registration and Examination Fees	908	4	3
Local Health Authority Recoups	4	2	10
T.B. Diagnosis (Generally)	52,056	2	7
T.B. Diagnosis (Wooroloo)	16,365	8	10
Total Revenue	£85,704	17	2

Expenditure.

	£	s.	d.
Salaries	158,427	4	10
Payments Local Health Authorities	12,923	13	6
School Hygiene	6,073	4	2
Travelling and Transport	2,157	14	11
Postage and Telephones	1,081	14	3
Laboratory	6,058	4	1
Venereal Diseases	3,309	17	3
Miscellaneous	13,240	14	8
Infant Welfare Centres	23,059	5	5
Maintenance and Transport of Lepers	17,117	6	7
Medical Officer and School Dentists Travelling	4,125	9	4
Diphtheria Immunisation	243	17	3
T.B. Clinics	105,944	13	2
Argentine Ants	4,504	11	11
	358,267	11	4
Sanitation Government Buildings	11,926	6	9
Total Expenditure	£370,193	18	1

By Authority: WILLIAM H. WYATT, Government Printer, Perth.